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Program Guide and Workbook



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Education Center

Massachusetts School-Municipal Data Processing Expo

June 10, 1988

Sponsored by

The Massachusetts Executive Office of Communities and Development
The Massachusetts Department of Revenue
The Massachusetts Department of Education
in cooperation with
The MMA Consulting Group

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WELCOME!

We are pleased to welcome you to the 1988 Massachusetts School-Municipal Data Processing Exposition.

The Expo was originally conceived by key officials of the Massachusetts Executive Office of Communities and Development (EOCD), Department of Revenue (DOR) and Department of Education as an important way to provide information on data processing to school and municipal officials. The Massachusetts Municipal Association, through the MMA Consulting Group, is pleased to have the opportunity to participate in this important effort. We also wish to acknowledge the cooperation of the Town of North Andover, which has been the grantee for the Incentive Aid Grant from EOCD which has supported the Expo.

Today's program includes three (3) major components:

1. A trade show, featuring as exhibitors almost every major vendor of school and municipal systems and services in New England.
2. A series of seminars for school and municipal officials who are interested or involved in data processing.
3. A program guide and workbook, which provides a broad range of articles and other information on school and municipal data processing.

In the next week, your community will also be receiving a copy of a municipal computer survey. With your cooperation, the survey will generate important information to help communities and state agencies in their decision-making with respect to computer technology. Please be sure that your community completes the survey and returns it in a timely manner.

We urge you to take advantage of these resources and use them to the benefit of your community and school district.

ACKNOWLEDGEMENTS

We wish to acknowledge the cooperation of the following individuals and organizations for their support of the 1988 Massachusetts School-Municipal Data Processing Expo and related activities.

Commonwealth of Massachusetts:

Executive Office of Communities and Development:

Amy Anthony, Secretary

Michael Tierney, Assistant Secretary

Richard Howe, Deputy Assistant Secretary

Mary Miley, Program Manager

Ann Whittaker, Senior Municipal Management Officer

Robert Adams, Consultant

Department of Education:

Harold Raynolds, Jr., Commissioner

David Jones, Assistant Commissioner

Peter Murphy, Director, Bureau of School District
Reorganization and Collaboration

Department of Revenue:

Stephen Kidder, Commissioner

Edward J. Collins, Deputy Commissioner of Local
Services

A. Louis Hayward, Director, Municipal Data
Management/Technical Assistance Bureau

Julie Heagney, Director of Data Services

Jeffrey Wulfson, Director of Administration

Board of Library Commissions:

Robert Duggan

Town of North Andover:

Paul D. Sharon, Town Manager

Charles F. Mansfield, Director of Finance

Massachusetts Municipal Association:

Edward Moscovitch, Executive Director

William A. Kennedy, Jr., Deputy Executive Director

Brent A. Wilkes, Director, MMA Consulting Group

Susan Miller, Management Consultant, MMA Consulting Group

Michael Hale, Research Assistant, MMA Consulting Group

Maria Zaccardi, Administrative Assistant, MMA Consulting Group

Daniel Soyer, Director of Communications

Harry Durning, Public Information Officer

Adam Auster, Communications Assistant

Edward Sterling, Exhibit Coordinator

Patrick Marquis, Intern

Marie Johnson, Membership Services Coordinator

Sunni Starkes, Administrative Assistant, Membership Services

Sandra Major, Research Assistant

Addis & Reed, Media Relations

Douglas A. Rae, Survey Coordinator

Massachusetts Association of Assessing Officers

Massachusetts Municipal Auditors' and Accountants' Association

Massachusetts Chiefs of Police Association

Massachusetts City Clerks' Association

Massachusetts Town Clerks' Association

Massachusetts Collectors and Treasurers Association

Massachusetts Municipal Data Processing Association

Fire Chiefs' Association of Massachusetts

Massachusetts Section, American Planning Association

Massachusetts Association of School Committees

New England Chapter, Urban and Regional Information Systems
Association

1988 MASSACHUSETTS SCHOOL-MUNICIPAL

DATA PROCESSING EXPO

LIST OF EXHIBITORS

We wish to thank the following agencies and firms for exhibiting at the 1988 Massachusetts School-Municipal Data Processing Expo.

Please visit their booths today. All of our exhibitors looking forward to hearing from you as you pursue your interest in data processing.

LIST OF EXHIBITORS

Booth #

Executive Office of Communities
and Development
100 Cambridge Street
Room 904
Boston, MA 02202
Contact: Richard Howe,
Deputy Assistant Secretary
617-727-3253

47

Department of Revenue
200 Portland Street
Boston, MA 02204
Contact: Julie Heagney
617-727-2300

44

Department of Education
1385 Hancock Street
Quincy, MA 02169
Contact: Dr. Peter Murphy
617-770-7598

23

Adirondack Systems Associates
P.O. Box 333
Saratoga Springs, NY 12866
Contact: David Gibson
518-587-5113

24

Arlington Trust Company
476R Broadway
Methuen, MA 01844
617-681-7352
Contact: Ed Thomas
617-681-7352

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LIST OF FIRMS

Booth #

| | |
|--|----|
| Blue Cross - Blue Shield of Massachusetts 100 Summer Street Boston, MA 02110 Contact: John Conti 617-956-3162 | 37 |
| Computer Productivity Associates, Inc. 59 Grantwood Drive Amherst, MA 01002 Contact: Jan P. Braverman 413-549-1433 | 40 |
| Computer Systems & Software 111 Sack Boulevard Leominster, MA 01453 Contact: Ronald Dagenais 617-537-1202 | 54 |
| Connolly Data Systems Inc. 246 Market St. Lowell, MA 01852 Contact: Lauren Clark 617-458-7630 | 39 |
| CONTEL Business Systems, Inc. 333 Elm Street Dedham, MA 02026 Contact: Ray Johnson 617-329-7800 | 26 |
| Core Business Technologies 2224 Pawtucket Avenue East Providence, RI 02914 Contact: Arthur Dorfman 401-431-0700 | 48 |
| Data General Corporation 400 Computer Drive Westboro, MA 01580 Contact: Mark Cain | 21 |
| Directional Software Inc. 501 Main Street Hattiesburg, MS 39401 Contact: Mike Purvis 601-545-1005 | 48 |
| Entre' Computer Center 1085 Commonwealth Avenue Boston, MA 02215 Contact: Sharon S. Lazar 617-783-2345 | 20 |

LIST OF FIRMS

Booth #

IBM Corp.
1 Copley Place
Boston, MA 02116
Contact: Robert O'Connell
617-638-1438

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ISCA Business Systems
54 Middlesex Turnpike
Burlington, MA 01803
Contact: Robert Kraekel
617-229-0100

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Infocel, Inc.
P.O. Box 18305
5711 Six Forks Rd.
Raleigh, NE 27609
Contact: Mike Pelone
919-848-0001

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J.L. Hammett Company
Hammett Place
Box 545
Braintree, MA 02184
Contact: Connie McMillin
617-848-1000 ext. 184

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KVS Information Systems, Inc.
4043 Maple Road
Suite 201
Amherst, NY 14226
Contact: Chris Kent
1-800-999-9587

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Keystone Information Systems, Inc.
1000 Lenola Road
Maple Shade, NJ 08052
Contact: Jay T. Reed
609-722-0700

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MISTI
Management Information Systems & Training Inc.
One Monteith Drive
Farmington, CT 06032
Contact: Julia Longcope
203-673-9699

17

MMC Inc.
19 Alpha Road
Chelmsford, MA 01824
Contact: Dick Romano
617-250-1100

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LIST OF FIRMS

Booth #

Orchard Computer, Inc.
178 Samoset Street
Plymouth, MA 02360
Contact: John F. Souza
617-747-4683

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Pamet Systems, Inc.
989 Main Street
Acton, MA 01720
Contact: Joel B. Searcy
617-263-2060

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Photo-CAD Services, Inc.
245 Summer Street
P.O. Box 2325
Boston, MA 02107
Contact: Gary Banko
617-589-7539

19

Prime Computer, Inc.
24 Prime Parkway
Natick, MA 01760
Contact: Bill Holland
617-651-3342

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Roger Creighton Associates, Inc.
274 Delaware Avenue
Albany, NY 12054
Contact: Roger L. Creighton
518-439-4991

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SMS Computer, Inc.
1 Heritage Mall
P.O. Box 273
Berlin, MA 01503
Contact: Ann Miles
617-562-7961

31

The Co/Op
115 Second Avenue
Waltham, MA 02154
Contact: Frank M. Piso
617-890-0700

29

The Payroll Company
2 Blackburn Center
Gloucester, MA 01930
Contact: Gary Rackleff
617-281-4660

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LIST OF FIRMS

Booth #

Unisys Corporation
60 William Street
Wellesley, MA 02181
Contact: Donald Lussier
617-237-1000

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Wang Laboratories, Inc.
67 So. Bedford St.
Burlington, MA 01803
Contact: Robert Sakakeeny
617-273-9867

49

McDonnell Douglas Corporation
12 Alfred Street
Woburn, MA 01801
Contact: Roy Auger
617-938-1570

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The Computer Center
366 U.S. Rt. 1
Falmouth, Maine 04105
Contact: John Marr, Jr.

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New England Telephone
185 Franklin Street
Room 104A
Boston, MA 02107
Contact: George O'Hare
617-743-7617

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| <u>10:30 - 12:00 Noon</u> | |
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| Boxborough Room | Managing Micros--What Local Governments and Schools Need To Know |
| Weston Room | Public Safety--State Services, Funds and Trends Affecting Police and Fire Departments |
| Westborough Room | Selecting and Evaluating Data Processing Systems |
| <u>1:30 - 3:00 P.M.</u> | |
| Northborough Room | How To Sell Your Computer Budget To Town Meeting, Councils and School Committees |
| Westborough Room | DOR Works For You--CAMA, Schedule A and Other Ways That DOR Can Help |
| Boxborough Room | Department of Education Programs and Services--Working for Schools Throughout the Commonwealth |
| Weston Room | Computer Committees--Their Role in Your Community |

WHAT EOCD CAN DO FOR YOU -- SUCCESSFUL MODELS IN DATA PROCESSING FOR SCHOOLS AND MUNICIPALITIES

Time: 10:30 - 12:00 Noon

Room: Northborough

EOCD has provided substantial assistance to schools and municipalities throughout the Commonwealth in dealing with a variety of issues related to data processing. The Incentive Aid Program has been particularly important in this effort over the last 5 years.

Key personnel who have been involved in this effort in a variety of ways review their experience and look to what the future holds.

Panelists: **Richard Howe**
Deputy Assistant Secretary
EOCD

Ann Whittaker
Senior Municipal Management Officer
EOCD

Dr. Richard Lavin
Merrimack Education Collaborative

Neil Nover
Director, MIS
City of Fall River

Captain William Webb
Danvers Police Department

Michael K. Smith
Associate Director
MMA Consulting Group

MANAGING MICROS -- WHAT LOCAL GOVERNMENTS AND SCHOOLS NEED TO KNOW

TIME: 10:30 - 12:00 Noon

Room: Boxborough

Microcomputers have continued to grow in numbers in local governments and school districts.

This has raised many issues in the management of microcomputers, including:

- Compatability
- Communications
- Strategies for the use of micros
- Responsibility for the management of micros
- Security

Local officials who have had significant experience with these issues and others in managing micros will offer the benefit of their experience.

Panelists: **Ricardo Valdes**
Director, Data Processing Services
City of Worcester

Michael Hernon
Chief Analyst, MIS
City of Boston

Fred Mansfield
Director of Finance
Town of North Andover

PUBLIC SAFETY -- STATE SERVICES, TRENDS AND FUNDS AFFECTING POLICE AND FIRE DEPARTMENTS

Time: 10:30 - 12:00 Noon

Room: Weston

The Commonwealth has a number of polices, programs and funds which affect local police and fire operations. This specifically includes matters related to data processing and information management -- E-911, NFIRS, UCR reporting and others.

This panel offers the perspectives of officials of the Commonwealth and municipalities on these questions.

Panelists: **Daniel Bibel**
Director, Statistical Analysis Center
Massachusetts Committee on Criminal Justice

Captain David Jankowski
Amherst Police Department

Chief William Dolan
North Andover Fire Department

SELECTING AND EVALUATING DATA PROCESSING SYSTEMS

Time: 10:30 - 12:00 Noon

Room: Westborough

Municipalities and school districts continue to grapple with the process of selecting and evaluating data processing systems.

What can we learn from the experience gained over the last several years?
What are the keys to charting a course and navigating these waters successfully?

Presenter: **Sheldon S. Cohen**
Associate Director
MMA Consulting Group

HOW TO SELL YOUR COMPUTER BUDGET TO TOWN MEETING, COUNCILS AND SCHOOL COMMITTEES

Time: 1:30 - 3:00 P.M.

Room: Northborough

The best of plans depends on appropriations to come to life. Local legislators and school committees require full analysis and justification of requests for funding of data-processing expenditures. At the same time, good preparation leads to support from the community.

Local officials will share their experience in achieving success in votes for appropriations for systems and services.

Panelists: **Dennis Power**
Town Manager
Town of Oxford

Neil Nover
Director, MIS
City of Fall River

Dr. William Anderson
Chairman, Ware Computer Committee

DOR WORKS FOR YOU -- CAMA, AUTOMATED SCHEDULE A, MUNICIPAL DATA BANK, AND OTHER WAYS THAT DOR CAN HELP

Time: 1:30 - 3:00 P.M.

Room: Westborough

The Department of Revenue has been very active in developing applications of data processing for communities.

Special attention in this presentation will be paid to 3 major innovations in data processing from DOR:

- (1) The CAMA program
- (2) The Automated Schedule A
- (3) The Municipal Data Bank

Panelists from DOR:

Julie Heagney
Director of Data Services

David Davies
Director of the CAMA Program

Roger Hatch
Data Base Administrator
Municipal Data Bank

Arnold Kanter
Senior Systems Analyst

Bob Trahan
Supervisor, Schedule A
Bureau of Accounts

DEPARTMENT OF EDUCATION PROGRAMS AND SERVICES -- WORKING FOR SCHOOLS THROUGHOUT THE COMMONWEALTH

Time: 1:30 - 3:00 P.M.

Room: Boxborough

The Department of Education offers several services to assist school districts in meeting their data-management requirements.

Personnel from the Department will update school officials on these services.

Panelists: To be announced.

COMPUTER COMMITTEES -- THEIR ROLE IN YOUR COMMUNITY

Time: 1:30 - 3:00 P.M.

Room: Weston

Communities look to their computer committees to play a variety of roles in local efforts related to data processing. The nature of these roles depends on the community's expectations, the composition of the committee, local politics and the history of data processing in the community, among other factors.

Local officials who have been involved in computer committees will offer perspectives on their experience and advice to peers.

Panelists: **Jim Reagan**
Chairman
Easthampton Computer Committee

Randy Connolly
Director of Information Services
Town of Natick

PUBLICATION CREDITS

We wish to acknowledge the organizations and publications which have granted permission for reprinting the articles which appear in this Workbook.

The following articles are reprinted from publications of the Massachusetts Executive Office of Communities and Development:

"Municipal Data Processing Systems Needs Assessment," in Municipal Electronic Data Processing: A Primer for Local Government Officials

"Step 3: Contracting--Getting What You Want," in How To Buy A Computer or Computer Services For Your Community

The following articles are reprinted from the Municipal Forum, the quarterly magazine of the Massachusetts Municipal Association:

David L. Post, "Technophobia," Spring, 1988

Anne Eustis, "Computers on Main Street," Spring, 1988

The following article is reprinted from the June, 1985 issue of the Beacon, the monthly newsletter of the Massachusetts Municipal Association:

Sheldon Cohen, "The Quest for Excellence: Data Processing Is For Managing Information"

The following articles are reprinted from Managing Small Towns, Brent A. Wilkes, Editor, a publication of the Massachusetts Municipal Association:

Sheldon Cohen, "How Can Computers Help Any Town Manage Its Information Systems"

Sheldon Cohen, "How Does A Town Go About Determining Its Computer-Related Needs and the Right Mix of Hardware and Software"

The following article is reprinted by permission of ASBO International from the December, 1987 and January, 1988 issues of School Business Affairs:

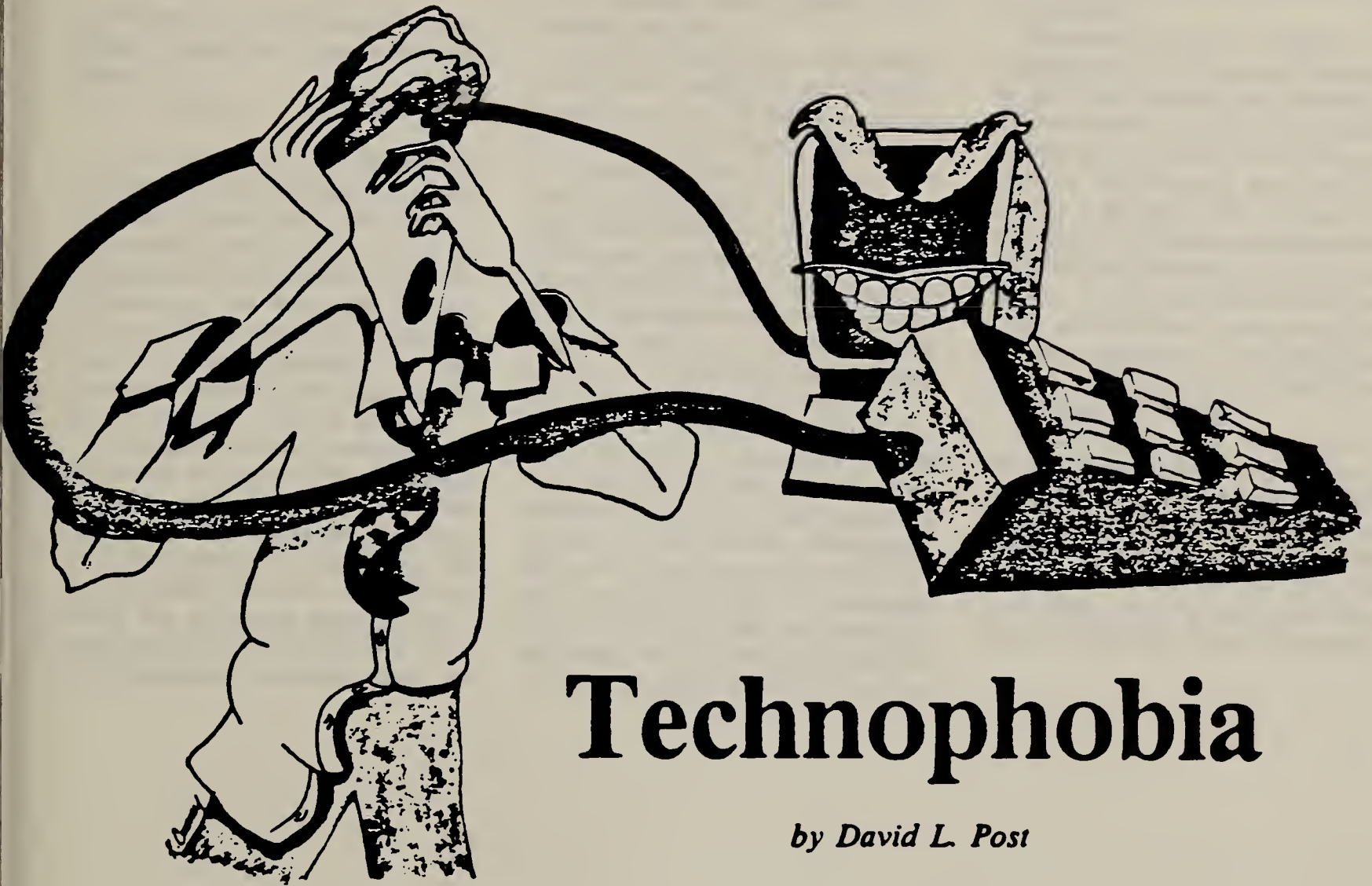
Judy Touchton, "Administrative Uses of Computers: Report Of A Survey of ASBO Members"

The following articles are reprinted by permission of the American Society for Public Administration from the January/February, 1984 issue of the Public Administration Review:

James R. Griesemer, "Microcomputers and Local Government: New Economics and New Opportunities"

L. E. Voss and Donald Eikmeier, "Microcomputers in Local Government"

William A. Ramsey, "Local Government Microcomputer Information Systems"



Technophobia

by David L. Post

It's the classic terror that keeps you tossing and turning all night. You know it's as inevitable as paying taxes—only worse, of course. Sure, it might make you feel just a little bit better talking it over with someone. You may have even considered one of those support groups where you share your anxieties with other people like you. But then you think, Why bother?—knowing as you do that each passing day brings you a little closer to it. One day, you realize despairingly, you'll have to face it.

David Post, Ph.D., is a member of the Psychological Services Association, a private group of mental health professionals providing a broad range of clinical, educational, and consulting services, with offices in Chestnut Hill and Framingham.

Computers, that is. Office automation. A fear shared by many people just like you.

All signs are that someday most offices will be fully integrated networks of terminals, mainframes, and software. As someone who grew up before the technological revolution and who might have missed out on computer training in grammar school, you may be feeling behind the eight-ball.

Do you feel cursed by the cursor? Has the VDT taken a megabyte out of your self-confidence? To find out, take the following true-false test:

1. I sweat and hyperventilate whenever I see a modem.
☐ True ☐ False

2. I was never any good at logical thinking.
☐ True ☐ False

3. Computers are gunning for my job, and are probably having more fun on weekends.
☐ True ☐ False

4. You need to have an advanced degree in electrical engineering in order to operate a personal computer.
☐ True ☐ False

5. One push of the wrong button will wipe out 200 years of irreplaceable records forever.
☐ True ☐ False

6. Working behind a terminal will make it more difficult to relate to my coworkers.
☐ True ☐ False

The Municipal Forum

7. Computers can make irrevocable mistakes that might ruin my life.

☐ True ☐ False

8. Information systems help Big Brother keep his eye on me.

☐ True ☐ False

9. Whenever I think about spreadsheets, I long for a quill pen and ledger.

☐ True ☐ False

If you answered True to only two or three of the above questions, your aversion is mild and a user-friendly relationship can be yours for an investment of a little time and effort. If, however, you responded affirmatively to five or more questions, you may have the beginning of an irrational avoidance of computers. But do not despair. There is help.

When faced with any new situation or change in routine, people behave in fairly predictable ways. A first reaction is often one of confusion and disorientation because the old reliable tried-and-true ways of doing things are no longer appropriate or available. This may bring with it an accompanying emotional state we

call anxiety. It feels uncomfortable and we try to reduce it. We may long for the days when our desk was terminal-free and merely covered with stacks of annoying folders and papers. We may harbor secret fantasies of taking a meat cleaver to the infernal machine.

In the end, though, growing acceptance of the reality of the situation takes over as we mobilize what psychologists call "coping strategies." We gradually begin to figure out ways to respond and to adapt in ways that make sense. Part of the process is being able to see features or aspects of new situations that are similar to other challenges we've confronted in the past: learning a new skill, such as typing, or assimilating the functions and responsibilities of a new job.

The process of trial and error is a very important component of this learning, and of course making mistakes is a large part of the reason for avoidance and anxiety. But gradually, over time, we begin to construct our own framework for problem-solving. Some of this can be taught, but most of it is self-constructed. If we find something that works, we

tend to stick with it. These problem-solving strategies or constructs build on each other, and each time we meet with success, our confidence assists us in building some more until we have acquired a sense of mastery and competence.

Uncertainty and anxiety are appropriate and expected reactions to novel and unfamiliar conditions. All too often, we tend to personalize a situation to the extent of believing that we are the only ones who are having a difficult time coping. This can lead to an even greater sense of isolation and avoidance. But you can be sure that if you're feeling anxious there's a coworker nearby who's feeling the same way. Checking things out with others is often a useful way to defuse this feeling.

Intimidating as it may seem at times, the equipment on your desk is under your control. It is there to help you do your job, not to take it away from you. So the next time computer anxiety threatens to interface with your peace of mind, take a few deep breaths and relax. You're in control!

HOW CAN COMPUTERS HELP ANY TOWN MANAGE ITS INFORMATION SYSTEMS?

by Sheldon Cohen

Towns are information factories. Almost everything a town does is based on the intake, processing and output of information in some form—printed, written, magnetic (e.g., tape or disk) or oral. Information underlies virtually everything that towns do.

Computer technology is one of the most important tools which towns have for improving how they use and manage information. Computers can help towns in many ways.

1. A good system promotes cooperation, teamwork and sharing of information among town officials. Before a computer system can truly help a town, internal organizational issues need to have been resolved. There must be a recognition—in fact, a promotion—of the sense of interdependence which underlies the town's achieving the potential benefit which high-quality computer technology offers.

This interdependence is illustrated in the two diagrams which follow. For example, the town should work to develop an integrated property records system, accessible by potential users at any time under appropriate security. Redundant, conflicting entry of data by the assessors, building inspector, planning board, fire department and others simply should not be necessary. This group of offices (and others) should be functioning as a community development team, using the power of the computer together to promote better policy making and management for the town.

2. Timely access to information is one of the foundations of effective public services. This can range from (1) providing up-to-date reports on expenditures and budget estimates to the selectmen and finance committee to (2) responding in a matter of seconds to the inquiry of a police officer who has stopped a suspect on the street.

Any office should be able to access whatever information it may need when it is required. In the late 1980's, there is no good reason for any user of computer technology to suffer from a delay in the system in getting his job done.

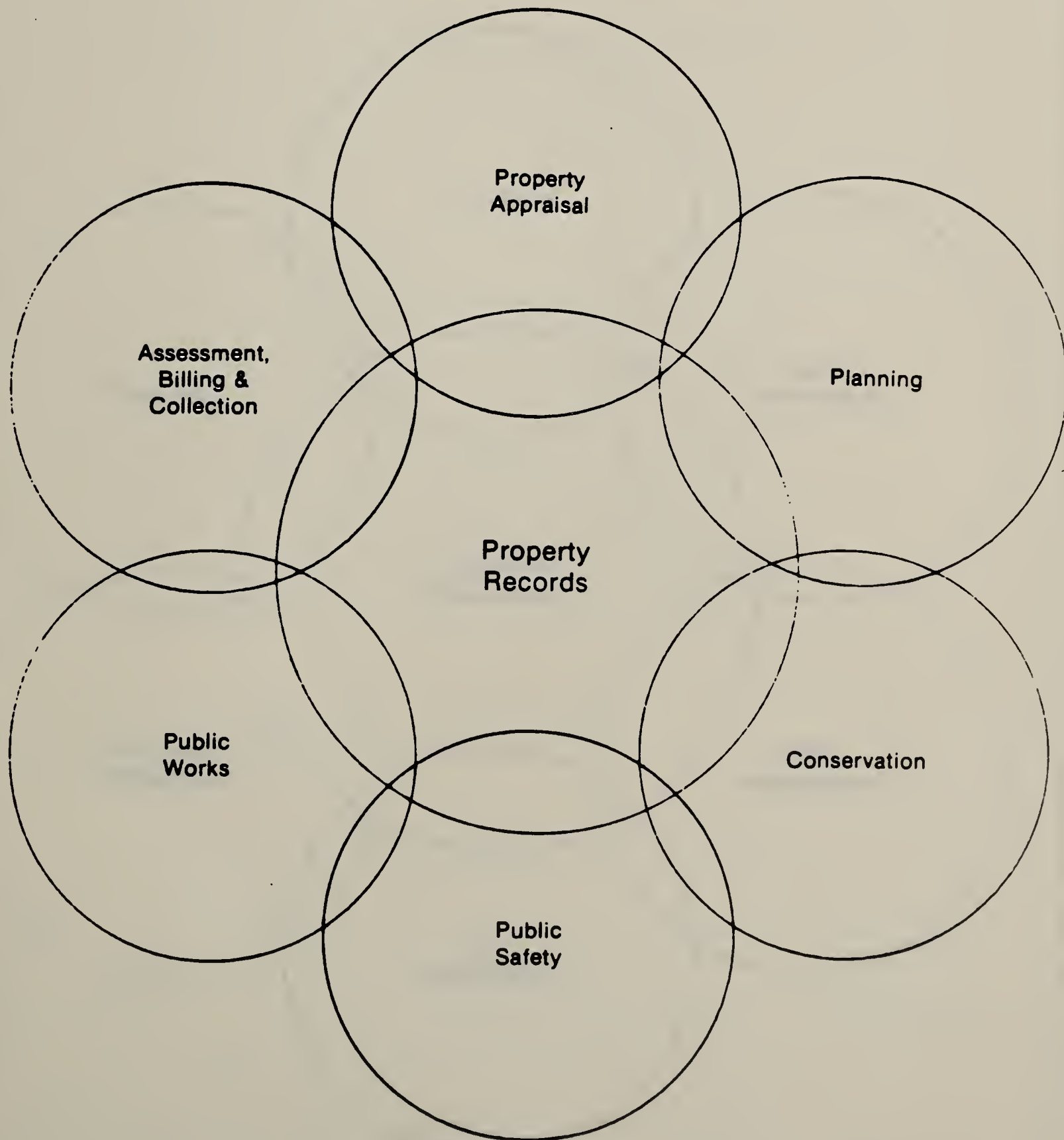
3. Duplication of effort is eliminated or absolutely minimized. Data should only need to be entered once by the person involved in the original transaction, without subsequent rekeying of the same data by anyone else. This is called "transaction-oriented processing." It is one of the fundamental standards in using today's computer technology.

Benefits of Using Computers

Question 59

EXHIBIT XVII

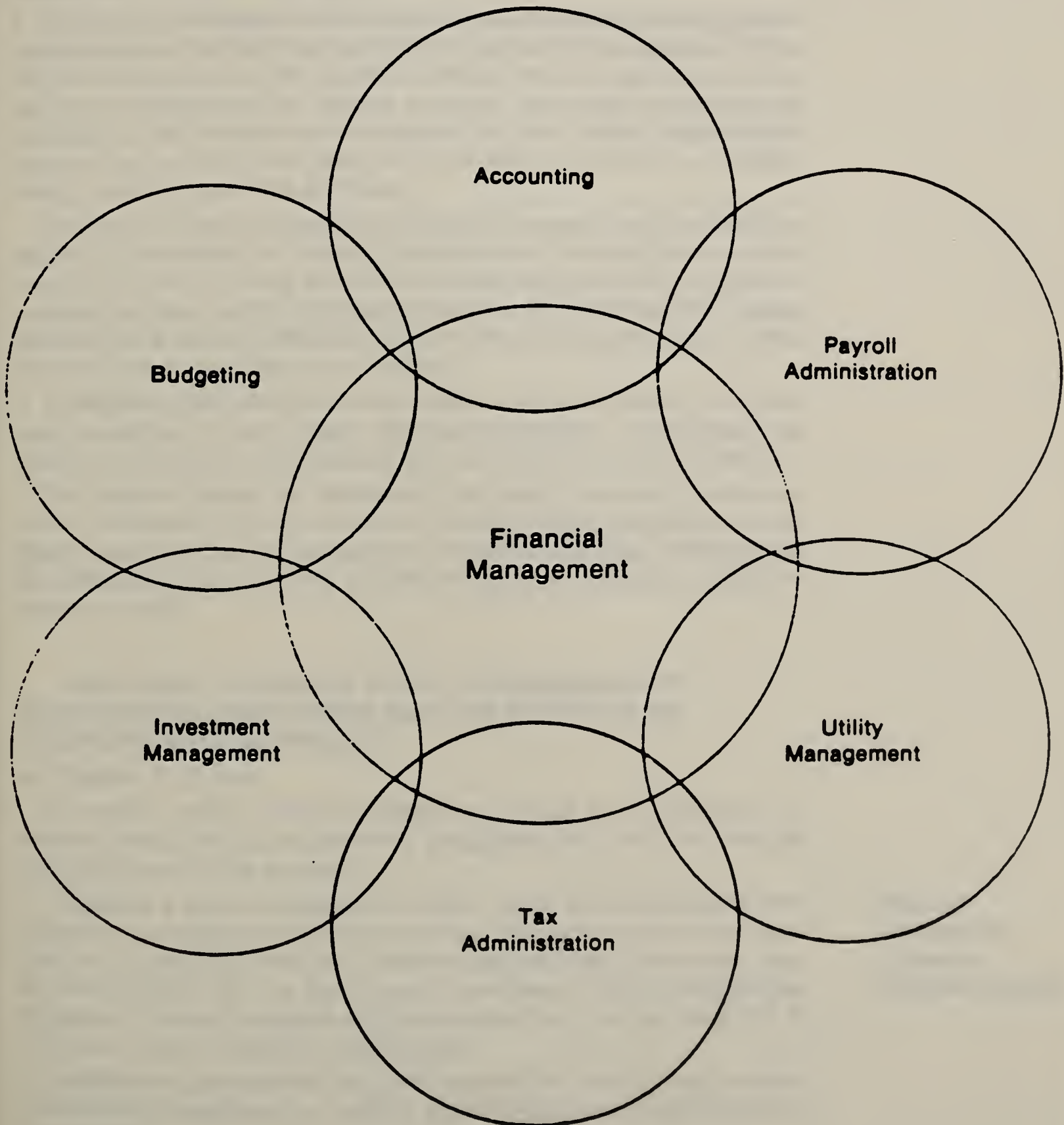
**DIAGRAM OF THE
PROPERTY RECORDS SYSTEM**



Question 59

EXHIBIT XVIII

**DIAGRAM OF THE
FINANCIAL MANAGEMENT SYSTEM**



An example of this is in the purchasing process. The input of information for a requisition should **not** need to be rekeyed for the purchase order. The system, likewise, should be able to print all purchase orders, eliminating the need for their retyping. The printing of the purchase order should automatically update all of the town's accounting records, eliminating the need for any physical posting of encumbrances by the town accountant. At the time of invoicing, payment of the invoice should automatically liquidate the encumbrance and update all associated vendor and accounting records, again without any physical intervention into the system by the town accountant on a transaction-by-transaction basis.

4. The town can respond much better to new, different and unexpected circumstances. We call this capability "information management." This software gives the town the ability to analyze its information as the town alone may determine or require in ways that were previously not anticipated. We can ask the computer to list, sort, select, total or count data in the way which **we** want, without being limited by the original design and coding of the software.

Consider how many appeals to the board of assessors on revaluations could be eliminated by listing (pre-auditing) obvious errors in the valuation of land or listing of structural characteristics before notices of valuation are sent out to all property owners. Or think how easily water billings could be pre-checked by generating exception-based reports for very high or very low consumption.

5. Computers can facilitate inter-office communication. Electronic mail, calendaring and other office-administration capabilities are revolutionizing how organizations carry on their work in the 1980's.

This occurs mainly by eliminating the need for direct person-to-person contact to carry on the town's business. Messages can be sent to one or more people with access to a terminal at any time. Meetings can be scheduled among several people without the customary rounds of telephone calls.

HOW DOES A TOWN GO ABOUT DETERMINING ITS COMPUTER-RELATED NEEDS AND THE RIGHT MIX OF HARDWARE AND SOFTWARE?

by Sheldon S. Cohen

Successful use of computer technology rests on a foundation of actions which need to be carefully organized and executed from the very beginning of the process.

1. Organize a users' committee. Involve clerks and supervisors from potential user-departments in all activities. These are the people—not a citizens' committee—who will need to make the new system work, day-in and day-out, for the next five to ten years. Their participation, education, training, support and commitment are the key elements in the town's use of computer technology.

2. Establish a general plan. The users' committee needs to put on paper its goals and objectives, i.e., what it wants to accomplish generally and specifically.

**Steps to
Determining
a Town's
Computer Needs**

This step alone may take a few meetings, simply to hash out a direction for the town. Here, the committee begins the process of building a consensus in the town around why and how computer technology should be applied to meeting local needs.

3. Set a timetable for action. Once the general plan is in place, the committee needs to establish a timetable for meeting the plan's objectives.

Caution! Be conservative in your estimate of the time that will be required to meet various milestones. Inevitably, rabbits don't spring out of hats: things almost always take a little longer than we may originally have expected or hoped.

The timetable should be reviewed and revised on a regular basis. The committee should keep track of original versus revised dates for completion of tasks: this can be helpful in diagnosing reasons for progress or delay.

4. Identify one member of the staff as a project coordinator. This person will serve as the single point of contact for all matters related to this process. Among other things, this might include: coordination of the committee's activities; communication with other town agencies (selectmen, finance committee, school committee); working with consultants; and contacts with potential vendors.

The project coordinator should have the necessary interpersonal skills, energy and status in the organization to carry out these important responsibilities.

5. Carry out a complete town-wide assessment of needs. This is the step on which all subsequent activities rest.

Here, we identify the town's **functional requirements**. This is done through a view of relationships, not as a listing of town offices. Here, look back to the diagrams in Question 59. See, for example, who shares what interest in the financial management or property records systems.

This comprehensive, functional view of the organization gives us the information we require to determine short-term and long-term needs.

6. Set clear priorities and follow them. This grows out of the needs assessment. Priorities may be based on such factors as:

- High current cost of manual, service-bureau or obsolete in-house systems.
- Crisis, through which the town has not been able to meet its service-oriented or administrative needs in a timely, reliable manner.
- Poor quality of services, due to unsatisfactory performance by a vendor or the absence of appropriate computer-based tools.

Don't try to conquer the world overnight. Typically, we recommend about two months between the implementation of major applications.

7. You're bigger than you think you are. One of the basic mistakes made frequently by towns (and too often silently promoted by vendors) is to undersize the hardware configuration.

We usually estimate disk storage requirements at roughly 15 megabytes per thousand population. Thus, a town of 10,000 people should plan on roughly 150 megabytes of disk storage.

There are substantial economies of scale in purchasing hardware: it's usually cheaper to buy a larger configuration at the beginning than to upgrade to that same configuration later.

8. Take a serious look at what you can afford. Given fiscal constraints and the political culture of the town, it doesn't make sense to proceed with an approach to computerization which won't play before town meeting.

Affordability has several components:

a. Make sure that you've identified all of your current in-house and service-bureau costs. We often find that towns have underestimated these costs by 30% to 50%.

b. Consider financing by State House notes, bonding or lease-purchase. These are all legitimate options which can enable the town to manage the fiscal impact of computerization more easily than appropriation from available funds or taxation.

c. Analyze proposed costs over five, seven, and ten-year horizons. A new system may be expected to have a useful lifetime of five to ten years. Comparing current costs with future costs on this basis will give a truer picture of annual impact.

d. Identify expected improvements in services, operations and management. Towns often look at computerization in the first place because they realize that there are better ways to meet their responsibilities. Although it is hard to quantify the dollar value of these improvements, their impact should be detailed.

In addition, they need to be noted in comparisons of current versus future costs: the future cost may be greater because it provides a substantially higher level of service or effectiveness to the town.

9. Put together a good RFP. The Request for Proposals (RFP) tells vendors: (a) what your functional requirements are; and (b) the terms and conditions by which they will be met.

Key elements of the RFP include:

- Requiring a prime contractor to take full responsibility for all hardware, software, training and long-term support.
- Specifying a systems acceptance procedure, which ties together payment for hardware and software.
- Having the successful vendor provide a performance bond for the full amount of the hardware and software.
- Using a "turnaround document" format, where each vendor fills in the blanks, providing (as far as possible) comparable information among vendors.
- Incorporating the RFP into any future contracts.
- Holding the prime contractor responsible for providing hardware and software sufficient to meet the town's needs.

10. Evaluate vendors' proposals slowly and carefully. Haste makes waste. Remember: this is a five to ten year commitment.

Software is the key to the evaluation. To get a good view of software, have at least three demonstrations by vendors in your town hall. Don't go for "pony shows" or site visits to other towns to evaluate software.

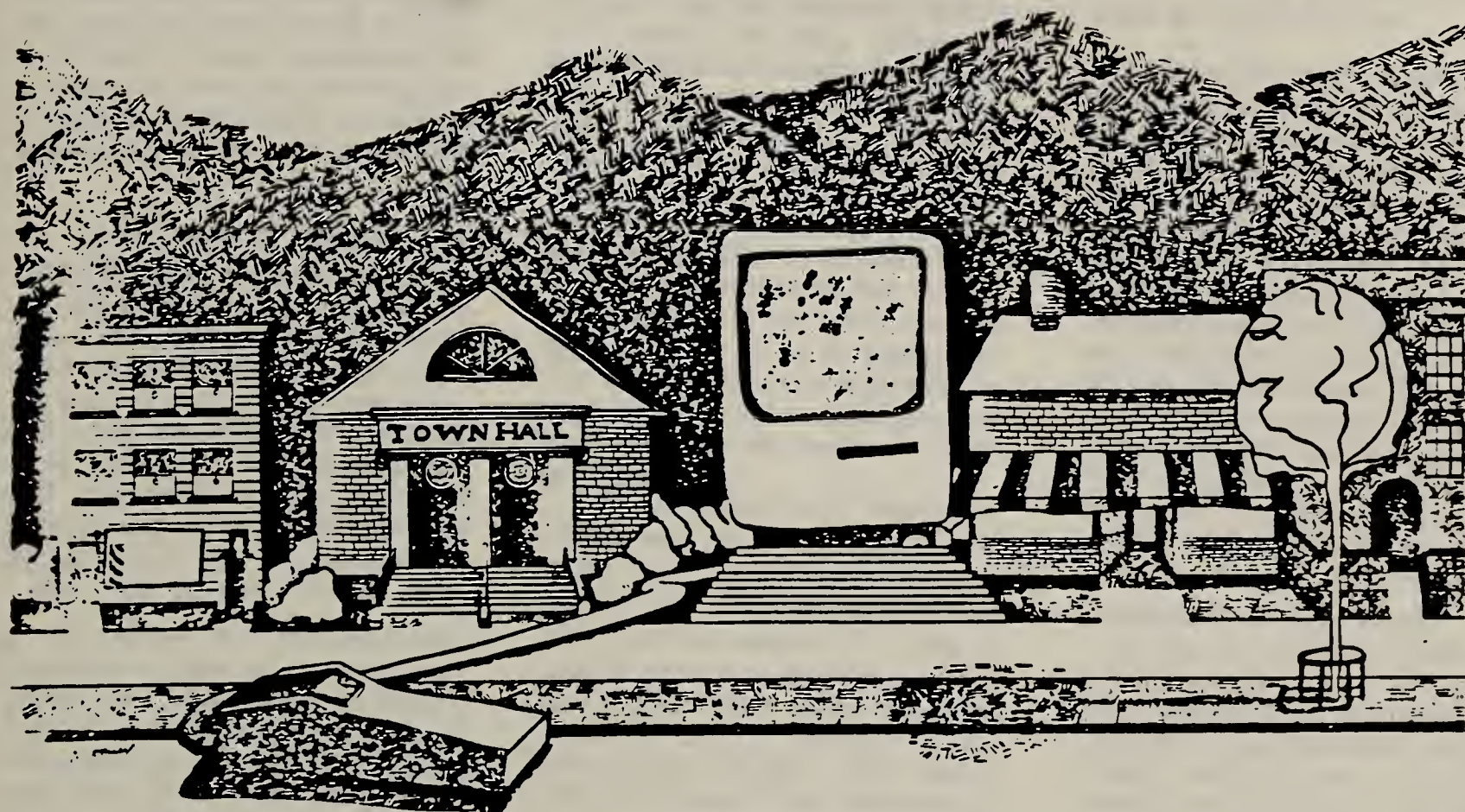
Be prepared to dedicate the time necessary for a good, thorough evaluation. Typically, each vendor's demonstration in your town hall will take one to two full days.

11. Put it in the contract. What is in the contract is what you get—no more and no less.

There should only be one contract with the prime contractor. It should be drafted and negotiated for the town by someone who has specific knowledge in government computer systems.



Computers



On Main Street

by Anne Eustis

When the Massachusetts Municipal Association asked me to participate in a workshop at its 1987 Annual Meeting, I was incredulous—I, a neophyte in the computer world, was to be a panelist in data processing! Surely, the people at the MMA must have taken leave of their senses. Then I realized that what they wanted me to share with you was not

Anne Eustis has served as the treasurer of the Town of Princeton for the past six years and has been actively involved in various aspects of town government for twenty years. Her article is based on her presentation at a data-processing workshop at the MMA's 1987 Annual Meeting in Boston last fall.

data-processing expertise, but simply the innovative process of introducing a small town to the big world of computers. I breathed a sign of relief—and you should too—for the people at the MMA hadn't quite taken leave of their senses after all.

My first inkling that a computer grant proposal for the Town of Princeton was being considered was in early 1986 when a young man from the Shawmut Worcester County Bank called me to see if I were interested in such a proposal. Since the topic of computers had already raised its head in a discussion with the selectmen and the advisory board, I decided "nothing ventured,

nothing gained" and answered that I would be glad to listen to the proposal. I heard nothing more for a long time, and then it was upon us: If Princeton would put up \$1,300, the MMA, with a grant from the Executive Office of Communities and Development, would provide a Macintosh computer, a printer, the basic programs MacWrite and MacPaint, the templates and manual for financial management and fiscal planning in small towns, and training for two people. There followed a hurried huddle with the selectmen and the advisory board, who agreed that this was too good an opportunity to pass up. And so Princeton, a small

town of about 2,800 people, stepped into the computer age.

I'm not quite sure how or why, but suddenly Princeton was named the "lead" town in this project. Of course, I can't claim complete innocence because as treasurer I did have to agree to the additional responsibility, which was hardly burdensome. Computers had piqued my curiosity for some time now, but this was the first time I had had a crack at them, so I decided to make the most of the opportunity. Also, my personal philosophy has always been that if a job is worth doing, it is worth doing well.

The Computer Arrives

Finally, the computer arrived in our office. The town accountant and I were designated as the two people to be trained to use this magic box. We were in awe of what it could do, and we did not feel at all in control of it. As a matter of fact, the computer still frequently mystifies me as I attempt to get in charge of some new program or set up a new spreadsheet.

Our two training sessions were group sessions with representatives from other towns in the grant program. This posed some difficulties because we were at different levels of experience. At our first training session, we made some progress in learning to "stroke" our mouse, and

If you are thinking of installing a computer in your town offices, consider the people who will be using it, for they may be your biggest stumbling block.

in discovering some of the myriad things you can do with a Macintosh. We went back to our respective offices all charged up to do what we thought we had mastered. Wrong—the computer was still in control! But Bill Kennedy and the MMA were only an 800 telephone number away

for on-the-spot help.

It became obvious that we needed more training than the two sessions provided in the original grant, so EOCD, at the request of the towns, provided additional Incentive Aid funds for one-on-one training on-site. This was indeed helpful.

We have now had the computers for a little over a year and in Princeton, at least, we have just begun to fully utilize our Mac. After our second session of training last fall, we put the town budget for fiscal year 1988 on the computer, and after every Advisory Board meeting we revised it. But we were still not comfortable in using the Mac, because making it do what we wanted it to do took more time than we had. Princeton is typical of any small town in that just a few of us do many jobs. The fact that Princeton is growing by leaps and bounds has added pressure to our various jobs and to our time constraints.

I finally decided that having the Mac control me was ridiculous. I sat down with the manuals and proceeded from the very beginning to learn how to control IT. I took a certain amount of guff from my fellow workers who made comments about my "playing" and the TV program I was watching, but I persevered. The result is that I now use the Mac whenever I can to do my work. I have used it more as a word processor, but I am beginning now to make the spreadsheets work for me also. I am frustrated because I can see how the Mac could save me more time, but it takes time to save time. The training sessions gave me the impetus to start using the Mac, but sitting down with the manuals really got me using it.

The Mac was an excellent choice of computer for the grant program simply because it is "user-friendly." In general, the people who work in small-town offices learned basic math, not computers, in school. This is a whole new ball game to us. If you are thinking of installing a computer in your town offices, consider the people who will be using it, for they may be your biggest stumbling block.

When this grant program was first

announced, I thought towns would besiege the MMA to be considered, but much to my amazement many treasurers wanted nothing to do with computers. I have also observed that many people who have not grown up with computers feel threatened by them. If you can get people past the negativeness, they will find, as I have, that the Mac is fun—frustrating at times, but definitely fun.

Although the small towns involved have made negligible use of the financial management templates provided by the MMA, the program has been very worthwhile. It has introduced us to computer technology and its potential. I know the MMA is exploring other programs to help the towns maximize use of their computers, and the towns are eager to participate. In fact, I have heard of a program that would like the MMA to consider. This computer program would take the bills from the point they go on the warrant, through the various bookkeeping steps, to the point the checks are written. Now that sounds like bliss to me.

As I have researched the next steps Princeton might take, I have become more and more convinced that the Macintosh route is the one we should follow. And the more I learn, the more excited I become. I am discovering there are lots of Mac enthusiasts in the government sector and they are eager to share their knowledge and experience both in acquiring hardware and software and in how best to use it. I have found it exciting that I not only can network the Macs in the office, but can network with Macs outside the office, too.

Many people in small-town government learned only basic math, but they still are receptive to new technology and the efficiencies it generates. Thanks to the MMA and to EOCD, eight small towns are now "into computers" one, two, or even more years ahead of where they would be if left to their own devices. If you get the chance to jump on the bandwagon, I strongly urge you to do so.

Section III

Municipal Data Processing Systems Needs Assessment

MUNICIPAL SELF-EVALUATION

This section, by drawing on the information presented in the previous two sections, will provide direction to municipal officials in assessing their community's current data processing requirements by comparing their needs against what service bureaus and other municipalities can offer.

Review Criteria

For each data processing system, automated or manual, which a municipality may have, the following should be considered in determining whether or not there is a data processing system problem within a department or there is a need for overall system improvements.

- ☐ Cost comparisons between a municipality's present system cost and what similar systems cost in other municipalities.
- ☐ Method of data entry.
- ☐ Turnaround time from data collection to task completion.
- ☐ Degree of duplication in data files.
- ☐ Number of errors in reports and causes of these errors.
- ☐ Data need for problem solving.
- ☐ General user satisfaction with data processing system.

Data Processing Evaluation Worksheet

The worksheet in Exhibit 5 can be used by municipal officials to perform a preliminary evaluation of their community's data processing system whether it is automated, manual, or a combination. The worksheet incorporates the criteria previously listed and should be completed by the official most familiar with automated or manual methods of data processing utilized within the municipality. The results will assist in determining whether the processing of specific procedures needs improvement or whether an in-depth analysis of the municipality's total system is needed. The worksheet completed for all applications used within a city or town would also provide a base list to be used during a further analysis of electronic data processing requirements by technical personnel trained in analyzing data processing systems (systems analyst).

Exhibit 5 provides an example of the worksheet completed for one municipal department (for a list of potential applications by department see Section II). A blank worksheet suitable for reproduction is contained in Appendix B.

The worksheet should be filled out in the order in which the applications are organized within the municipality undertaking the review if they do not follow precisely the examples included in this Primer.

A description of column headings used on the worksheet follows:

] *Functional Area or Department*—The department which requires the processing of specific applications should be listed in this space. For example, if generating water usage bills and recording payments are applications listed and performed by the water department, it would be included on the sheet under Public Works.

] *Application*—The information generating task is the actual activity being examined, e.g., water usage billing, water bill payments, summons bill, liens, etc.

] *Frequency of Need*—The number of times the activity is processed during the fiscal year should be stated here, e.g., a payroll which is processed every other week would be processed 26 times, certain utility bills may be processed 2 times, and so on.

] *Annual Volume*—The aggregate units processed under this activity during the fiscal year should be stated here. For example, 12,000 water bills processed twice a year equals a total volume of 24,000 annually or a general ledger report generated monthly equals a total of 12 reports annually.

] *Cost of Current Service*—If possible, the cost for processing the application should be calculated and indicated here, e.g., to generate 24,000 water bills requires 2 clerks at \$10,000 each or $\$20,000 \div 24,000 = \0.83 (cost per unit of service).

] *User Satisfaction*—The respondent should indicate whether or not the processing of this activity is satisfactory considering such elements as:

-Turnaround time—Have excessive delays been experienced on a continuous basis such as late tax bills?

-Accuracy—Is constant correction necessary on work performed?

-Adequate data—Is the proper information being supplied for problem solving?

] *Automated*—If an activity is processed by an in-house computer or contracted to a service bureau, the activity is automated and the response should be yes. If not, no should be checked.

] *Further Analysis*—The official completing this worksheet should indicate whether further analysis is needed for the particular application by drawing upon the responses, and whether or not a problem is perceived in the processing of this application.

When the worksheet is completed for each functional area or department, the municipality has a preliminary information data base for comparison with other communities which may be considered comparable, an indicator of the need for an overall needs analysis, and an inventory which can be used when approaching service bureaus for cost estimates and which will be helpful to a systems analyst charged with examining the data processing requirements within the municipality.

Data Processing Evaluation Worksheet

Functional Area or Department

| Application | Frequency of Need | Annual Volume | Cost of Current Service (per unit) | User Satisfaction | | Automated | | Further Analysis | |
|-----------------------------------|-------------------|---------------|---------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| | | | | YES | NO | YES | NO | YES | NO |
| WATER USAGE BILLING- | 2 | 24,000 | 1.20 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| WATER BILL PAYMENTS | 2 | 24,000 | 1.00 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| SUMMONS BILL | AS REQ'D | 2,000 | 3.00 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| LEINS | " " | 200 | 3.50 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| SEWER USAGE BILLING | 2 | 24,000 | .80 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| SEWER USAGE PAYMENTS | 2 | 24,000 | .50 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| CONSTRUCTION ACCOUNTING | AS REQ'D | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| LOCATION OF WATER AND SEWER LINES | UPDATED AS REQ'D | | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |



nce you've decided which system or service to use, contract negotiation begins. This step is critical in protecting your interests. Be as careful in contract negotiation as you were in preparing the request for proposals. You are about to make a significant financial commitment for at least several years, based on the promises of a vendor. Protecting your commitment and ensuring delivery on the vendor's promises are what the contract does. The municipal legal officer should be involved early in the contracting process to protect your interests.

If you choose a particular system, you must decide whether to rent, lease, or buy. This choice is essentially an economic decision. The factors to be considered—the cost of borrowing, your fiscal posture, the life of system hardware, etc.—will vary according to your needs and the judgment of your decision-makers.

Consider these points:

- Rental arrangements tend to be short-term (generally on a month-to-month basis for up to a year) and at premium prices that let the owner collect the equipment's cost in four to five years—in exchange, of course, for accepting the risk that you will cancel the contract. The flexibility of this arrangement, however, gives you leverage in ensuring good service.
- Lease contracts usually last for several years.¹ As a result of this lessened risk to the provider, your cost is lower. Equipment is gener-

ally owned by a third party (some other than the original equipment manufacturer or vendor). "Home-lease" contracts are strictly for the use of the equipment, while other contracts have an option to buy. As a rule, the community that takes the option-to-buy approach assumes ownership of the equipment when the lease ends. On the negative side, a stiff penalty is usually imposed for cancellation of the lease. The International City Management Association finds that the lease option, in general, "is the most cost-effective of all financial arrangements available to a community," especially "... if a long-term commitment can be made and if there is a possibility of purchasing the equipment."²

c. Buying a system is another option. Here, you assume ownership as soon as the contract terms (including acceptance testing) have been met. Aside from a sacrifice of general flexibility, the key risk of this option is the possibility that the system you buy will become obsolete. A well-conducted feasibility study and request-for-proposal process, however, can project data processing needs for the next three to five years. You can select a system capable of meeting current and

¹ Up to five years for Massachusetts municipalities (Section 4, Chapter 40, M.G.L.).

² International City Management Association, "Developing an EDIP Capacity," *Management Information Services*, May 1978, Vol. 10, No. 5

STEP 3: Contracting Getting what you want

You are about to make a significant financial commitment for at least several years, based on the promises of a vendor.

future needs. An initial lease with an option-to-purchase arrangement is one way to overcome these concerns.

Whatever arrangement you choose, pay special attention to the contract. The International City Management Association expressly advises you to influence the terms and general tenor of the contract, and to avoid accepting standard vendors' contracts. These are likely to be biased in the vendor's favor. The important matter is to be sure that, when the technical and protective provisions are on the negotiating table, they are protecting the public interest. Legal draftsmen can put substantive agreements into the proper contractual language before signature. By being the first to set the terms for negotiation, you control the negotiating process.

The International City Management Association suggests these key features:

- Two time periods should be specified in the contract: the period for which bid price is guaranteed, and the period for which service specifications (such as training, software, or manpower) are available.
- Adequate "backup"—extra machinery and people—should be provided within a specified number of hours of breakdown.
- The contract should specifically permit the connection of other vendors' peripheral equipment—plotters, printers, etc.—subject to fair maintenance arrangements.
- The rate for extra computer use and the method of its calculation should be specified in rental contracts.
- You should not be liable for payments until the system is installed and has passed acceptance tests.
- Equipment should be warranted to be free of design defects and, if

defective, repairable at the vendor's expense.

- Prices and operational guarantees for software should be specified.

- The contract should permit you to veto charges for vendor services that you find unacceptable.
- The schedule of charges should be precise and should be guaranteed against increase for a mutually acceptable time. The contract should also stipulate that any general price reduction offered by the vendor must be given to you.

- The schedule of equipment delivery and installation should be specified, as should the schedule for preparing the rooms and offices that will be affected. The vendor should accurately specify all aspects of site preparation that are required.

- You should specify all performance and acceptability standards, as well as the acceptance-testing procedures. Insist on imposing penalties if acceptance tests are failed or adequate performance is not maintained after acceptance.

Contracts

The contract establishes the obligations of both you and the vendor. All too often, the importance of a contract is not appreciated until something goes wrong—frequently, it's a dispute over an undischarged obligation.

To avoid this, contract performance terms should be thorough and explicit. Although you may still have disputes on the interpretation of key terms, they can be minimized if you are careful in drafting the contract.

Vendors often try to use standard contracts. These favor the

vendor. They should be avoided, or at least carefully scrutinized and modified, to protect your interest. Ideally, you should draft your own contract.

How much leverage you have depends on the size of your city or town, the size of the vendor, and the scope and cost of the system you want. Few communities will enjoy the leverage that the federal government, a state, or a large metropolis such as Boston or Houston has in achieving the most favorable terms.

Remember that the contract should be an outgrowth of the request for proposals. It should embody, in detail, all those offers made by the vendor and accepted by you. The request for proposals and all vendor offers are the substance of the contract. The vendor's proposal and any supplements or clarifications should be viewed as a written commitment. The contract should explicitly incorporate the bid submission as binding.

The following contract considerations assume, in turn, a lease-with-purchase-option arrangement with a profit-making vendor for hardware and software, time-sharing services from a service bureau, and time-sharing services from another government agency.

All contracts should be reviewed by your legal officer, your auditor/accountant, and any other officer who will have to certify that goods and services have been delivered in accordance with the contract.

Contracting For Hardware And Software With A Private Vendor

The most common data processing arrangement between ven-

The important matter is to be sure that, when the technical and protective provisions are on the negotiating table, they are protecting the public interest.

dors and municipalities involves buying or leasing computer equipment and applications. Whatever arrangement you choose, protect your investments by carefully constructing the contract. Following are key items in this type of contract. It should:

1. Identify the parties and express their willingness to agree to the terms that follow. The contract should indicate the length of the lease period (if applicable) and permit you to exercise your purchase option at whatever point(s) are agreed. It should also indicate whether ownership of the hardware/software passes to you when the lease expires. The main advantage of a lease-purchase agreement is that the interest portion paid to the lessor may be tax-exempt.¹
2. Incorporate all written and oral commitments concerning contract services: prices and options committed to remain in force for specified periods of time; representation or warranty in any literature, drawings, descriptions, etc.; presented in the proposal; any modifications to hardware, software, or the total system, made during negotiations; and any representations in the proposal, supporting documents, and negotiation concerning training, services, prices, and options.

3. Commit you to issuing a purchase order for the hardware by a reasonable date. The contract must provide for the date by which hardware is to be installed and ready to use, whether or not yet accepted. Both parties should agree to a good-faith negotiation of the installation date should the purchase order not be issued on the date specified.

ified or should you need to delay the installation date for a reasonable period (e.g., 30 to 60 days).

The equipment should not be considered installed until adequate documentation has been presented, proving that a successful system audit was performed at the designated installation sites according to contract terms.

The contract should obligate you to have the site fully prepared by a specified period of time before installation—unless such preparation is part of the vendor's obligation under a subcontract. The contractor should be allowed into the site at reasonable hours and upon sufficient notice prior to the installation date. Installation should not initiate any municipal obligation to pay prior to satisfactory performance of hardware/software during acceptance testing.

4. Require the vendor to provide all programs, routines, subroutines, translation compilers, complete audit and maintenance diagnostic routines, and other items of general use for the equipment ordered. All such programming aids would meet vendor specifications as represented and acceptable to you.

5. Provide for liquidated damages, as they serve to protect you. They essentially assign an agreed-upon value to damages for items undelivered or unacceptable, or for other failure to perform. Damages are usually set by determining the cost of the item in question, and figuring that cost as a percentage of the total contract price. In practice, it may be difficult to attribute an economic or operational value to an item that is part of an entire system, especially when the performance of other items may depend on it. Liquidated damage

clauses can cover both hardware and software.

6. Specify the performance standards for equipment. A typical standard is reliability during some percentage of base time (95 percent, for example) over a number of consecutive days' operation following installation. The contract should provide for retesting in the event of failure and for replacing the equipment or terminating the contract if reliability is not established within a specified period following installation. The contract should specify which party is responsible for the testing and, at a minimum, it should allow you to participate in or observe the tests.

7. Make the vendor guarantee the performance of all equipment purchased for a suitable period (e.g., 90 days) after acceptance. The vendor should be responsible for replacing equipment that doesn't work during that period. He should also be responsible for all the packing, transportation, insurance costs, etc. The guarantee period should begin anew for all replacements. If the system doesn't work when it's supposed to, the lease charges (if applicable) should be adjusted. You and the vendor should agree upon a formula for this computation.

8. Make the vendor responsible for both preventive and remedial maintenance. Preventive maintenance should be performed outside the specified working hours. The vendor should specify the number of hours of preventive maintenance by equipment item to meet reliability standards, and the frequency and duration of preventive maintenance visits. You should provide the vendor with a monthly schedule for such visits. This schedule should be subject to reasonable adjustment by mutual accord.

Remedial maintenance should be

By being the first to set the terms for negotiation, you control the negotiating process.

¹Internal Revenue Code, Section 103.

Protect your interests by ensuring that all guarantees and representations made by the vendor . . . are incorporated by reference.

performed when you notify the vendor of system failure. The vendor should designate a person for you to contact. The contract should specify how soon repair people are to arrive, and it should specify a penalty formula in the event of late arrival (the formula should be used to reduce that month's lease costs).

Malfunction reports may be required of the vendor, (including such items as time of notification and arrival, equipment involved, time to repair, malfunction description, parts replaced, and charges or credits).

9. Make the vendor provide training to enough people so that they can operate, program, and routinely maintain the system. This commitment should extend to providing technical assistance on system use and improvement over the contract period.

10. State who will prepare the computer site. This is usually done by the community, although you can ask the vendor to do this through a subcontract. Site preparation specifications should be prepared by the vendor and reviewed by you in either case. If you prepare the site, the vendor should be required to make in-progress and final inspection and acceptance. Any mistakes in specifications for site preparation may result in liquidated damages if you and the vendor agree.

11. Require that you get any price discounts offered by the vendor. The vendor should give such discounts on all hardware, software, and related items or services.

12. Make the vendor responsible for the transportation of all equipment to the site, for its installation, and for the return of defective or replaced equipment. All charges for these services should be paid by the

vendor. You should insist on reviewing and approving shipment and installation plans in a timely fashion (i.e., with adequate prior notice and a reasonable review and consent period).

13. Provide for purchase and title acquisition of the system under any rental or lease/purchase arrangement. You should be able to purchase at any time following acceptance of any and all equipment.

Stipulate your terms of payment, at either the purchase price for which the equipment was offered at the time of the initial lease/rental or for the purchase price prevailing at the time of actual purchase, whichever is less. This price should be reduced by two adjustment factors: a specified percentage for each month of age from the capitalization date and a specified percentage of the lease/rental and maintenance charges you pay before buying.

The contract should explicitly exclude you from paying federal, state, and local taxes from any financial consideration due the vendor.

14. Make the vendor responsible for the risk of loss or damage to the equipment during transportation and installation. Let the vendor obtain his own insurance.

15. Make the vendor agree to stock all replacement parts for equipment leased with purchase option. This obligation should extend for the life of equipment (as stipulated) and remain in force after the purchase option is exercised. The vendor should agree to offer these parts at the prices provided in a price list. After this period of obligation to stock spare parts has expired, the vendor should still be obligated to provide parts or part-manufacturing specifications to let

you get them made elsewhere.

16. Make the vendor provide all manuals for operators, programmers, users, and repair people as well as full schematics of the system.

17. Provide for signature by properly authorized personnel and for evidence of such authorization. The contract must also be approved as to form by the municipal legal officer.

18. Include all guarantees and representations made by the vendor. Conventionally, contracts feature appendices that are referred to at appropriate points in the main body of the text and are incorporated by reference into the contract as binding agreements

on the parties. These appendices should include all system performance specifications, equipment and software specifications, service obligations, site-preparation specifications, training, delivery, and other scheduling matters, system and applications software, supplies, prices and payment obligations, bonding arrangements, etc. Be as exhaustive as possible, but protect your interests by ensuring that all guarantees and representations made by the vendor during the proposal and negotiation stages are incorporated by reference.

Contracting With A Service Bureau

Service bureau arrangements and contracts are as varied as customer needs. Typically, the services offered include computer time rental, programming, system design, facility management, and the processing of common and specialized software. Despite this variety, some general principles can be set forth.

A contract should specify the scope of services you want. It should set standards for measuring time of system use (including what parts of any job are encompassed by chargeable time). The matter of payment for errors (indeed, the very question of which party made the error) should also be addressed—along with the related question of insurance protection for financial loss that exceeds the cost of the service bureau fee. The contract states the terms of your agreement with the service bureau. It should not be treated casually, but should be carefully crafted and scrutinized. If a dispute arises during the contract term, careful scrutiny *will* be required: prudence dictates that this care be exercised before signature, when corrective language is readily inserted. In general, the service bureau contract should contain the following provisions:

1. The introductory clauses must identify the parties to the contract (by official, legal designation and address) and provide a clear statement that, by mutual covenants, the parties agree to the terms stipulated in the ensuing sections of the contract.
2. The service bureau must agree to perform the services you require. The contract should require timely and satisfactory performance by the contractor. Timeliness and satisfactory quality should be tied to a schedule of deliverables also attached to, and made a part of, the contract.
3. A statement of goods and services to be supplied should be set forth, and the service bureau should be charged with providing them at its expense. They may include:
 - i) The services described in the appendix or attachment to the

contract.

- Any stockpaper supplies required to perform the data processing services under the contract.
- The number of hours per month of keypunching and verification (or data entry).
- Computer time for application processing.
- Services of a data coordinator at the central facility to edit municipal inputs/outputs.
- Storage for tapes, disks, etc.
- All computer personnel needed to discharge the duties in the attached job specification.
- Specified number of weekly (or more frequent) courier trips between the municipal office and the central facility or backup facility.
- Creation of backup software and files.
- 4. You should be responsible for clarity and legibility in all data coding.
- 5. The service bureau's performance responsibility should, by contract, extend to the provision of backup facilities (including alternate backup facilities) should the bureau's central facility be out of service for an extended time. Any incremental cost related to the use of the backup facility (e.g., added travel or courier, data transmission and reception, adapting existing software to the new facility) should be borne solely by the service bureau.
- 6. The beginning and ending dates of the contract must be specified. You may opt to extend the contract under the same terms for an additional period. If so, the conditions of notification and time period of such extension should be specified.
- 7. The contract must contain a section on the costs of services. They should be itemized and di-

rectly tied to the goods and services contracted for. The contract appendix, which itemizes goods and services, should be used to describe these costs. The prices should remain in force under any contract extension period if you and the service bureau cannot agree upon a revised set of prices.

8. Taxes on goods and services should be treated in the contract. Generally, cities and towns do not have to pay taxes on goods and services. The service bureau should be responsible for any such payments.
9. The responsibility for charges and payments should be clearly treated. The service bureau's responsibility for issuing invoices (time period, format, date, and any specifications peculiar to your accounts payable system) and your responsibility for timely payment (e.g., within 30 days of invoice receipt) should be described.
10. Responsibility for any "reruns" to provide you with data processing services under the contract should be provided for. Conventionally, the expense for such reruns should be borne by the service bureau if the source of the error is in keypunching, data coordination/editing, computer operation/function, and programming.
11. Protect yourself against breach of contract by expressly providing that your agreement with the service bureau does not limit your remedies for any breach. Any mutually agreed-to limitations on liability should be treated at this point.
12. Computer time is the basis for most of the contract charges. Procedures should be contractually established to provide accountability for time and charges. Important

If a dispute arises during the contract term, careful scrutiny will be required: prudence dictates that this care be exercised before signature, when corrective language is readily inserted.

provisions might include:

- Municipal receipt of job numbers and associated program names — periodically updated.
- Municipal receipt of monthly computer usage reports. This listing should include application and job numbers, computer time used, lines printed, cards read, disks mounted, etc.

13. The service bureau should agree to modify existing applications and to develop new applications at your request—subject to agreement on reasonable terms. You should retain the rights to any of these products and you should so state in the contract. You should also expressly reserve the right to approve any such modifications or new applications before they go into production.

14. The contract should require the service bureau to provide secure and confidential storage of your records. But you should, through your properly authorized agents, be guaranteed full access during reasonable hours to any municipal records, reports, software, and interpretative materials held by the service bureau.

15. The information you disclose to the service bureau and any new or modified applications developed under the contract should be explicitly treated as confidential and proprietary information. The service bureau should guarantee that it will not disclose this information in any manner (sales, lease, gift) during or after the period of contract. Exceptions may be made for information that is lawfully in the public domain or available from other sources.

16. The service bureau should be required to maintain the master files to safeguard against loss or destruction of records. Provisions for protection (e.g., vault storage)

should be described. The service bureau should be obligated to surrender to you all master files and other materials developed pursuant to the contract upon termination of the agreement and to certify that all materials have been surrendered.

17. Retention of right, title, and interest to the contract products (the programs you've paid for and the master files) should be retained by you.

18. Causes for contract termination on the part of either party should be described and notice provisions should be stipulated. In the case where you cancel, they could include late or unsatisfactory performance of contract obligations by the service bureau, voluntary or involuntary petition for bankruptcy, receivership, and assignment for benefit of creditors. The service bureau may be entitled to cancel if you fail to pay within a stipulated period after rebilling and for failure of both parties to agree on the financial terms for contract extension.

If any contract obligations (e.g., ownership of master files, confidentiality) should survive termination of the agreement, reference should be made to the pertinent sections of the contract.

19. The contract should cover the relationship of covenants or agreements to one another. You should insist that covenants be made separate, independent; and in the event any one is deemed illegal or unenforceable, severable. Any waiver of a provision must be in writing to be valid, and no waiver of breach should be construed as sanctioning or waiving any prior, concurrent, or subsequent breach. The service bureau should not be allowed to assign contractual rights, duties, obligations, or responsibilities without your prior written permission.

20. The manner for transmitting all notices and permissions described in the contract should be stated. Usually this will be by registered or certified mail. Both parties should designate the responsible people (and addresses) for this purpose.

21. You should add whatever antidiscrimination provisions are required by law or policy (the categories most frequently employed are race, color, religion, gender, national origin, and handicap) and any requirements for affirmative action. The municipal legal officer should be consulted for standard contract provisions.

22. Signature by the properly authorized agents of both your city or town and the service bureau are required to effect an agreement. Both parties should include evidence that the signatories are, in fact, properly authorized. Such evidence may be attached and incorporated by reference.

23. Contract attachments or appendices should be bound with the contract. They may include the data processing job specifications, schedule of performance, and statement of costs.

Contracting For Time-Sharing Services With Another Municipality Or Government Agency

Communities are sometimes offered the opportunity to contract for electronic data processing services with another agency of the government. (In Massachusetts, there are several municipalities and regional school districts with computer centers that provide such services to neighboring communities. See Section 4A, Chapter 40, M.G.L., for authorization.) This

type of arrangement offers mutual advantages. The city or agency that owns the facility can save a substantial portion of the costs of ownership by providing services to someone else. In turn, you get the services at a lower rate than what you would pay from a profit-making service bureau. The arrangement, moreover, is between organizations that share the common ground of public service. The provider can appreciate the constraints and demands on you. Nevertheless, a dispute over either party's obligations can arise. So it's important to make your agreements in the contract. Keep in mind the following:

1. The contract must identify the parties and state that they agree to the terms described in the rest of the contract.
2. The municipality that owns the system (the provider) must agree to provide the municipality that will use the system (the user) with all specified data processing services. These services should be described as fully and accurately as required in a "data processing jobs specifications" appendix or attachment. This description should explicitly be incorporated as part of the contract. The user should require the provider to pledge satisfactory and timely performance of the work.

3. The goods and services the provider agrees to supply at his sole cost must be described. They would include such items as:
 - The data processing services described in the appended job specifications.
 - A data coordinator's services to control the user's input and output at the provider's facility.
 - Storage for disks, forms, and other items.
 - Necessary services of a computer operator to perform the services de-

scribed in the job specifications.

- Creation of master backup files to protect municipal data.

4. The user should accept responsibility for clear coding in all input data on forms designated by the provider — unless the user has a data entry terminal.

5. In this kind of arrangement, the provider is not likely to offer such service as transportation of data to and from the central facility. The user will likely have to make such arrangements. This matter should be addressed.

6. The length of the contract period must be specified by commencement and termination dates. There should also be a provision for continuing the agreement terms in force should an extension be agreed to by the parties.

7. All charges and payment obligations should be clearly described in the contract. The goods and services for which charges may be levied should be fully priced. The appendix for describing them is a logical place to set forth prices. The user should agree to payment of these charges (assuming satisfactory quality and performance) within a specified number of days (e.g., 30 days is conventional) following receipt of billing.

Prices under any contract extension should be provided for at this point. One frequently used approach is to carry over the price structure into any extension period — unless, prior to 90 days of the expiration date, both parties agree to change price or one party notifies the other of intent to terminate the agreement.

8. Should any reruns be needed to provide contract services to the user, and should the need for these reruns result from error by the provider, the required reruns should be accomplished at the provider's

expense.

If data or files are lost or destroyed while in the provider's custody, the provider should bear all cost, presumably through insurance, for reconstruction.

9. The proprietary or confidential nature of the materials entrusted to the provider should be recognized by the agreement. The provider should agree to take mutually acceptable safeguards that should be described in the agreement.

Whether or not the provider will accept any financial guarantees against damage from unauthorized disclosure should be explored by the user. If so, they should be described and agreed to in the contract.

10. The user and provider should agree that the provider will make changes in existing applications and develop new applications as the user may require. The provider should agree to perform this work at reasonable cost and under reasonable conditions to be agreed upon at the time of the user's request. All rights, titles, and interest in these products should reside in the user.

11. Master files for backup and restoration are an important safeguard for the user. The provider should agree to establish and maintain such files and keep them secure from loss, theft, fire, etc. The contract provides for clear user rights, title, and interest in these files.

12. Conditions for agreement termination should be described. These usually include failure of the provider to perform in a timely and satisfactory manner; failure of the user to pay within a specified time of billing; or failure of either, 90 days before expiration, to agree upon prices for any contract extension period.

13. The provider should pledge to

If data or files are lost or destroyed while in the provider's custody, the provider should bear all cost, presumably through insurance, for reconstruction.

promptly turn over to the user all copies of master files on computer-readable medium and any other materials developed for the user.

14. The contract should provide that none of the rights, duties, obligations, and responsibilities of the provider may be reassigned without the written permission of the user.

15. The agreement should require both parties to send any notices (e.g., notice of nonpayment, intent to terminate) mentioned in the agreement by registered or certified mail. Each party should specify an address for receipt of correspondence.

16. The mutuality and severability of all covenants in the agreement should be expressly provided.

17. All requirements relating to antidiscrimination and affirmative action should be set forth.

18. The contract should provide for signature by authorized agents of both parties and for evidence of authority, as well as for review as to form by the respective legal officers.

Exhibit 6 summarizes the contents of contracts for hardware and software, for a service bureau arrangement, and for arrangements with other government agencies.

Exhibit 6: Contracts — Summary of Contents

Hardware/Software Contract with a Private Vendor

- ☐ General Provisions
- ☐ Installation and Delivery of Hardware
- ☐ Installation and Delivery of Software
- ☐ Liquidated Damages
- ☐ Performance Standards (System)
- ☐ Acceptance
- ☐ Guarantee
- ☐ Maintenance
- ☐ Training
- ☐ Site Preparation
- ☐ Price Discounts
- ☐ Transportation, Installation, and Return of Hardware
- ☐ Purchase of Installed Equipment
- ☐ Risk of Loss or Damage
- ☐ Replacement Parts Availability
- ☐ Documentation
- ☐ Signature
- ☐ Appendices

Service Bureau Contract

- ☐ General Provisions
- ☐ Goods and Services Supplied
- ☐ Data Entry
- ☐ Performance Responsibility
- ☐ Commencement and Termination Dates
- ☐ Costs of Services
- ☐ Taxes
- ☐ Charges and Payments
- ☐ Reruns
- ☐ Liability
- ☐ Time and Charge Accountability
- ☐ Modifications
- ☐ Confidentiality of Information
- ☐ Master File Maintenance
- ☐ Title Retention
- ☐ Contract Termination
- ☐ Covenant Relationship
- ☐ Transmission of Notices
- ☐ Affirmative Action Policy
- ☐ Signature
- ☐ Appendices

Other Municipality or Government Agency Contract

- ☐ General Provisions
- ☐ Goods and Services Provided
- ☐ Data Entry
- ☐ Data Transportation
- ☐ Commencement and Termination Dates
- ☐ Charges and Payment Obligations
- ☐ Reruns
- ☐ Confidentiality of Information
- ☐ Modifications
- ☐ Master File Maintenance
- ☐ Contract Termination
- ☐ File Retention
- ☐ Assignment of Rights
- ☐ Transmission of Notices
- ☐ Covenant Relationship
- ☐ Affirmative Action Policy
- ☐ Signature

THE QUEST FOR EXCELLENCE

Many local officials have expressed a desire to improve the capacity of their local governments to provide public services and to excel in fulfilling their mission to the voters. In order to accomplish this they need to know how to evaluate their current operations and to be familiar with what is possible. To help fill this need, The *Beacon* is presenting a series on excellence in local government. Its purpose is to identify and define some basic ingredients for the achievement of excellence in the management of Massachusetts cities and towns. In each issue a different aspect of municipal management is covered. The articles are short and each presents a checklist designed to stimulate thought and help evaluate current practices. The series was conceived and developed by Brent A. Wilkes, the MMA's Field Services Division director. Its approach is inspired, in part, by the recent best-seller, *In Search of Excellence*, by Thomas Peters and Robert Waterman, Jr.—a book that identifies and documents the successes of some of America's best-run companies.

DATA PROCESSING IS FOR MANAGING INFORMATION

by Sheldon Cohen

Local governments are information factories. Almost everything a city, town, or county does is based on the intake, processing, and output of information in some form—printed, written, magnetic (e.g., tape or disk) or oral. Information is the commodity or resource which underlies virtually everything which local governments do.

Computer technology is one of the most significant tools which local governments have in the 1980's for improving how they use information. Better use of information should produce more responsive, effective, and efficient government services.

The checklist which follows is organized into four major categories: organization, planning, operations and management, and quality of use. The items on the list apply to every jurisdiction regardless of its size, extent of sophistication of use of computer technology, or form of government.

RESOURCES

There are several organizations and publications which provide information on computer technology in local government. These include:

- The International City Management Association, 120 F Street, Washington, DC 20005.

- *Computerworld*, Framingham, Massachusetts (the weekly "bible" of the computer industry).
- Government Finance Officers Association
- URISA (Urban and Regional Information Systems Association).
- MIS (Government Management Information System)

The MMA has consulted with more than thirty-five cities, towns, counties, and school districts in matters related to computer technology. Contact Sheldon S. Cohen, Associate Director of Field Services, Massachusetts Municipal Association, 131 Tremont Street, Boston, Massachusetts, 02111; (617) 426-7272, for more information.

Organization

1. There is a standing committee of major users. ☐ ☐
2. The users' committee meets monthly to review goals, problems, and progress. ☐ ☐
3. The mayor, manager, or chairman has his or her own terminal and uses it regularly. ☐ ☐
4. There is one person at the department-head level who is responsible for coordinating all activities related to information management. ☐ ☐
5. There is a regular, written, ongoing program for staff and user training. ☐ ☐

Planning

1. The jurisdiction has a long-term (three- to five-year) statement of goals for information management. ☐ ☐
2. The statement of goals is reviewed and revised annually. ☐ ☐

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3. There is an annual statement of objectives to be achieved in the next fiscal year. ☐ ☐

4. The statements of goals and of annual objectives are produced by the users' committee. ☐ ☐

5. Hardware and software investments are included in the jurisdiction's long-term capital improvement program. ☐ ☐

6. Information about plans is submitted at least quarterly to the Finance Committee and the selectmen, council, aldermen, or commissioners. ☐ ☐

7. Software and hardware are acquired from stable, experienced vendors with long-term contractual commitments for the vendors' support. ☐ ☐

8. Procurement decisions—especially for software—are made primarily on the basis of quality, not lowest cost. ☐ ☐

9. The software and hardware acquired constitute the vendor's latest release or best available technology. ☐ ☐

continued on page 9

Operations and Management

1. At least two people are trained in all skills. ☐ ☐
2. Back-up recordings of files are made daily, weekly, and monthly without fail. ☐ ☐
3. System resources—especially main memory and disk storage— are sufficient to accommodate current and expected levels of use without contention and delay. ☐ ☐
4. There is a standing arrangement for the use of another facility for emergency backup. ☐ ☐
5. The jurisdiction has complete current documentation for all applications. ☐ ☐
6. The jurisdiction has complete, accurate source code for all applications. ☐ ☐
7. Remote diagnostic support from the vendor(s) is implemented for all applications, system software, and hardware. ☐ ☐
8. Security is fully implemented, using the best available technology, with regular updates in policies and techniques. ☐ ☐
9. The jurisdiction has its own emergency power supply installed, with a power conditioner for all systems ☐ ☐
10. All applications have full, front-end data editing and validation. ☐ ☐
11. All applications have full on-line "help" facilities. ☐ ☐

12. Resource accounting software is used to optimize system management and to track system use. ☐ ☐

Quality of Use

1. All key offices have free access to non-technical report generators. ☐ ☐
2. All key offices use information systems for their own independant analysis and planning for department-level management and operations. ☐ ☐
3. The mayor, manager, selectmen, or commissioners specifically recognize innovative uses of information systems by particular offices within the jurisdiction. ☐ ☐
4. Enhancements to applications are encouraged and regularly scheduled for implementation. ☐ ☐
5. Use of computer technology by personnel at all levels—from clerks through department heads—is visibly encouraged and rewarded. ☐ ☐
6. Someone in the local government watches for new software and hardware which might help the jurisdiction to meet its functional requirements better. ☐ ☐
7. There is interdepartmental access to significant data, such as property records, as necessary and appropriate. ☐ ☐
8. All offices have free access to full-featured word processing and spreadsheet software. ☐ ☐

Public Managers' Forum

Microcomputers and Local Government: New Economics and New Opportunities

James R. Griesemer, Aurora, Colo.

Over the coming decade, information technologies in general and the microcomputer in particular are likely to have a significant impact on local government. Indeed, the development of the microcomputer may well result in major changes in the way local governments organize and the means by which they carry out operations. The purpose of this article is to examine the environment of change facing local governments and suggest approaches to the use of microcomputers.

The Economics of Computing

The fundamental fact behind the rapid growth of the personal computer industry is the economics of microprocessor chip technology.

The United States, along with the rest of the world, is moving into the information age because it is cost effective to do so. The shift from an industrially-based economy to an information-oriented economy began when the price was right. Specifically, it began in the early 1970s with the development of inexpensive silicon microprocessor technology—the so-called “computer on a chip.”

Within the span of less than a decade, the development of the microprocessor has created a virtual inversion of the economics of computing. Where previously computers were very expensive and computer people were (relatively) inexpensive, now the equation is reversed. Today computer hardware is inexpensive while computer programmers and technicians are quite expensive.

This reversal of the economics of computing requires that local government decision makers rethink a number of traditional approaches to computing. The old rules and procedures attendant to data processing and information management were based upon a vastly different economic model than exists today. Although traditional

approaches are often difficult to change, it is essential that a new paradigm be used in applying microprocessor based computing technologies to local government operations.

Traditional Rules of Computing

Before computers, in the pre-1940 world, computing was generally decentralized. For the most part, line departments in both public and private organizations did their own “data processing.” Departments maintained most of their own records and prepared most of their own reports, largely via manual systems.

The introduction of early computers changed the previously distributed nature of data handling. Computers, a more efficient means of handling large amounts of data, gradually replaced manual systems. Because early computers were very expensive, it was necessary to centralize computing as a matter of economics. This centralization gave rise to a whole series of responses which were quickly adopted as the “correct” approach to computing. These traditional rules of computing included, among other things, the following concepts:

- data processing operations should be centralized for maximum efficiency;
- the computer is an *organizational* resource, only to be used for items of high priority to the organization as a whole;

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- top management and/or departmental committees should determine what applications are of the highest priority;
- software should be developed in-house to meet unique organizational needs; and
- the data processing staff should produce the information product and deliver it to the end user.

These traditional rules for data processing served as "decision guidelines," and were useful when computers were expensive and, therefore, centralized. Problems could generally be tested against these guidelines to produce a sound decision, consistent with the economic realities of the time.

Microcomputers as Personal Tools

With an inversion in the economics of computing, however, the traditional guidelines no longer serve as a sound basis for making data processing decisions. Recognizing this fact is a matter of critical importance for the local government official attempting to successfully utilize new information technologies. If local governments are to gain the many potential benefits which microcomputers have to offer, decision makers must make decisions based on current economic realities, not past practices.

The most significant of these new realities is the greatly reduced cost of powerful microcomputers. This has changed computers from organizational to personal resources. True, a microcomputer can play a traditional central-computer role such as handling general ledger, payroll, or accounts payable. But, as important as these traditional functions may be, they represent only a small part of the vast applications universe for inexpensive, powerful microcomputers.

The great potential for microcomputers in local government, then, lies more in their use as personal productivity tools in the engineering, public works, police, fire, water, finance, and other departments. It is here, at the individual employee level, that the great potential for enhanced productivity and improved services to citizens lies. It is as a personal productivity tool that the microcomputer can significantly enhance local government efficiently and effectively.

Actually achieving this potential in a given local government will require officials of that unit to make scores of decisions in the months and years ahead. While it is not possible to suggest the correct decisions for every situation, it is possible to offer a framework for such decision making. Such a framework can provide new "decision guidelines" against which to test alternative courses of action.

Computer Applications

A leading issue concerning the use of the microcomputer as a personal productivity tool relates to the identification of potential applications. Previously, when computers served as central organizational resources, only applications of importance to the

organization as a whole were computerized. The high cost of, and competition for, computer resources generally prohibited applications which benefited only one or a few employees. Decisions relating to which applications to computerize were made by top management, committees, or data processing professionals since, presumably, these groups had the best organization-wide perspective.

Today, however, the falling cost of computing increasingly makes it practical to provide many employees with their own personal computer. With the computer serving as a personal tool, decisions as to which applications to computerize now rest largely with the individual employee, not with management or the data processing staff. After all, it is the individual employee who is in the best position to know which applications can best improve the productivity of his or her own job.

Above all, the microcomputer represents a vehicle to enhance employee creativity. It can free employees from repetitive work and provide time for more complex and creative tasks which build on the employees' unique training and skills. In the author's experience, applying many of the traditional rules of computing to microcomputers is exactly what should *not* be done. Requiring formal top management or data processing department approval of personal computer applications is the surest way to stifle initiative. Establishing elaborate technical criteria or detailed documentation requirements for individual applications may well be achieved at the cost of lost innovation, or missed productivity opportunities.

Rather, employees at all levels need to be encouraged to find innovative, productive ways of using decentralized computing power in their jobs. This applies to all positions: from department directors to secretaries to police officers to public works employees. Innovative uses of these remarkable new tools must not be discouraged by unnecessarily rigid technical requirements. This does not, of course, mean that all standards should be abandoned. It does, however, mean that archaic approval procedures dating from a past economic age need to be amended to encourage employee innovation.

Employee Training

In the near term, a major challenge facing virtually every local government employer is the need to expand employee computer literacy at all levels of the organization. This specifically includes first line employees who, ultimately, are in the best position to know how to improve the productivity of their jobs.

To identify possible applications, however, employees must have some awareness of the capabilities of microcomputers. This requires that all employees receive some type of computer literacy training. It also requires that employees have a general understanding of application programs such as word processing and "tool" software such as data base and spread sheet programs. This horizon-lifting effort is a major training challenge facing local government officials over the next

several years. The potential payoff in terms of both productivity gains and savings to taxpayers, however, are enormous.

Hardware Selection

Most employees neither know nor care what kind of central computer the local government uses. Employees will care very much about *their* personal computer. As a result, within the bounds of required technical considerations, employees should be allowed as much participation as possible in hardware selection.

What are "required technical considerations" for hardware purchases which need to be established by top management?

In fact, depending upon the application, there are surprisingly few. These include:

- ability to run desired software (essential);
- disk format (probably IBM compatible);
- minimum memory size;
- disk (or other media) storage capacity requirements;
- operating system; and
- multi-user capability (if required).

Increasingly, many brands of microcomputers can meet these requirements, consequently, evaluating other user-important features can, and should, involve the affected employee. These latter considerations include items such as keyboard touch, screen resolution, monitor color, physical size, and other features. Since the hardware market is very competitive, there is often an opportunity to select use-desired features with little or no cost penalty.

User involvement in equipment selection is an excellent means of establishing a strong sense of employee "ownership" and identification with new technologies. It also provides a positive climate in which to encourage the employee to improve his or her productivity through the employee's own creativity.

Software Selection

Although hardware selection is important, software is the ultimate key to productivity gain in local government. It is software which provides the solution to local government problems. It is software which provides the capacity to meet citizen needs more effectively and efficiently.

The economic inversion affecting computer hardware has also had an impact upon software. When a computer cost \$500,000 or more, spending \$50,000 to develop, in-house, a piece of software made economic sense. When computers cost \$5,000 however, spending \$50,000 to develop a single program is a much less attractive proposition.

Fortunately it is no longer necessary, and seldom desirable, to create software "from scratch" in the traditional sense. The explosive growth of microcomputers has created a burgeoning software publishing industry. Thousands of low cost, high quality packages are now available covering every imaginable area.

In addition to specific local government applications packages, a number of very useful general purpose software packages are available. Prominent among this latter group are extended word processing, data base management, and financial spread sheet programs. Data base and spread sheet programs alone can be used to create hundreds of local government applications. Word processing, often a good first application for a general purpose microcomputer, virtually assures significant productivity gains for local governments.

The Data Processing Department

As noted earlier, the data processing function is undergoing dramatic changes as a result of the new economics of computing. Because centralized computing is no longer an economic requirement, data processing is returning to line departments, closer to the work. This mandates a new, but even more significant, role for data processing professionals.

Where once data processing professionals produced the information product (e.g., a report), now they are beginning to help the user produce his or her own product on the user's own computer. The role of the data processing professional is thus changing from producer to advisor. Increasingly, data processing personnel are playing a key role as internal consultants and technical advisors to line departments in matters of software and hardware selection, training, and systems planning. In this capacity, data processing personnel are moving toward a more traditional "professional" advisory role, similar to that of in-house legal counsel.

Summary

The information age began when the economics of computing allowed the widespread introduction of powerful, inexpensive microcomputers. These computers have enormous potential for improving both local government productivity and enhancing services to citizens. The key to capturing this potential lies in understanding the new economics of computing and recognizing the new decision rules implied therefrom.

Because they are personal tools, potential microcomputer *applications* are often best identified by line employees closest to the work. The ability to identify such opportunities is dependent upon the employee understanding the general capabilities of computers, in order to make the "connection" between the problem and the opportunity to solve it by utilizing microcomputer technology. Achieving this linkage will require that local officials make computer literacy training a major agenda item in years to come.

Achieving gains with microcomputers also requires that local officials place as few artificial and bureaucratic barriers between the employee and his or her personal computer as possible. By encouraging innovative uses of microcomputers in local government, officials have an unrivaled opportunity to improve productivity and control costs while enhancing the level of services to citizens. For the concerned professional, that is an opportunity which is difficult to resist.

Microcomputers in Local Government

L. E. Voss, Seward, Nebraska

Donald Eikmeier, Seward, Nebraska

Introduction

If you believe that computers are expensive to buy and difficult to learn how to use, perhaps you have not seen the new generation of microcomputers. With easy to use software and readily available programs, it is now possible for local government staff and elected officials to have up-to-date reports on everything from cash flow to voter registration.

In this article we shall attempt to review some of the more obvious and readily available applications for microcomputers in municipal government. Some specific applications, such as load management, will be discussed in detail because of their unique application and potential for rapid payback on the cost of the computer equipment. Other applications such as general office needs will be discussed in lesser detail, on the assumption that many of the readers are already familiar with these programs and are, perhaps, already utilizing them either at home or business.

The hardware needed to run these programs is essentially a microcomputer with probably 256k RAM,¹ a minimum of two 5¼-inch disk drives and, ideally, both a letter quality and dot matrix printer. This equipment can be purchased from IBM,² for instance, for probably less than \$5,000. It is not the intention of this article to recommend or discuss specific hardware or software in detail and brand names when they are mentioned are only used as examples.

General Office

Most of the general office functions are readily available in well-written and well-documented software packages. These include such normal office functions as payroll, general ledger, accounts payable and receivable, and spread sheet programs for special applications. The cost of these programs typically ranges from \$100-\$800, and one can normally expect the quality and documentation to vary in direct proportion to price. However, this is not always the case and prior to buying any program it would be well to check magazine reviews or preferably talk to other users, particularly for ease of use and flexibility.

Word processing programs also vary substantially in price, again depending upon the capability required. Word processing functions can be particularly helpful in public administration for preparation, review, correction, and modification of ordinances, routine and special correspondence, and special reports to a city council or other legislative body. When combined with spread sheet and graphic capability these special reports

■ Microelectronics are everywhere from video games to the dashboards of our cars, but one of the last holdouts appears to be use of microcomputers in local government. This article explores some of the areas where microcomputers can be used readily and easily with a minimum amount of operator training. It will be seen that in some cases a \$15,000 expenditure in a microcomputer system can pay for itself in as short as one month in terms of savings for utility production costs.

can easily be illustrated with pie charts, bar graphs, etc. for ease of explanation and illustration.

Another obvious use of the microcomputer's word processing capability is the electronic storage of data. Special attention has to be given to such things as the accidental loss of data and the necessity for backups, but it is possible to store much of the data electronically which presently occupy dusty cardboard coffins in basements and attics of many public buildings.

Governmental

Because a large segment of public administration deals with lists, names, and numbers, a data base program is probably ideally suited to handle this type of work easily. With such a program, lists can be sorted in nearly any fashion, items can be individually summarized, and analysis can be easily performed. Examples of this type of work include schedule of assessments for water or paving districts, voter registration, public safety records such as fire and ambulance calls, accident reports, lists of invested funds, annual budgets, library records, license plate registrations, and others.

Utility Operations

One of the largest businesses of most municipal governments is the utility system operations. Most of the reports and data associated with utility systems can easily be handled by microcomputers to yield readily available operating statements for the governing boards, commissioners, or city councils.

Perhaps the obvious thing that can be done by a microcomputer is the utility billing itself. Programs are

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available for as little as \$495 for printing water and electric bills on a microcomputer. For \$1,895 one can buy readily available software that will bill for all utilities including electric, water, sewer, trash, police, and fire, and, additionally, make available preparation of special reports. These reports, for instance, can include how many customers owe more than \$100 for more than 30 days. This is valuable operating data for the utility management and can result in substantial savings by avoiding losses from bankrupt customers, misread meters, and other sources.

Production reports are another item that can easily be taken care of by a microcomputer and not so easily done by hand. They can yield the cost of producing electricity or water, for instance, on a monthly basis that includes year-to-date and past year comparisons for management's review. Reports such as this have been credited with saving as much as \$1,000 in monthly production costs in electric systems. Other reports such as delinquent utility billings, special deposits, transformer loadings, depreciation schedules, and monthly operating statements, all can be done on the microcomputer.

Maintenance schedules, present inventory, lists of inventory for exchange with other utilities, are reports that can be important to have but are difficult to maintain without a computer. However, once one has learned to construct a report format on the computer the data entry and maintenance can become routine.

Many of us can remember in the recent past when the monitoring of a utility system on a real-time basis was both an expensive and a difficult problem. With the ready access to microcomputers, modems, and remote terminal units, this situation has all drastically changed. City managers, administrators, clerks, and utility superintendents can now have real-time data available at the touch of a button on their microcomputer. This allows them to monitor critical inputs to the system such as peak demands on the electric system, water pressures on the water system, and proper operation of a waste water treatment plant. Programs are now available which allow one to set high and low limits for any of the measured parameters so that in the event of mechanical failure, excess demands, or unusually high or low water pressures, the computer will sound an alarm and easily display where the problem is on the system.' As will be seen in the following section, monitoring the utility on a real-time basis and taking needed corrective actions can result in paybacks of the computer hardware and software in periods of a year or less.

Load Management

Load Management, as the name implies, is essentially an attempt to manage the costs of a utility so that the customers enjoy the maximum benefit at the minimum cost. A typical example of this is a concentrated effort by the utility management to minimize the peak demands on a water or electric system, thereby reducing any needed capital investments. This has been done quite successfully in several towns in Nebraska by monitoring their electric systems on a real-time basis,

i.e., by reading the loads every 15 minutes, for example, and working with the customers to minimize the peak demand. This is often done by telephone alerts to the major customers, sometimes by blowing the fire whistle in smaller towns, by changes in rate design to reward the customers for minimizing their peak demand, or by mechanical control of the customer equipment such as interrupting the air conditioners for a few minutes at a time. The city of Curtis, Nebraska (population 1014) installed an IBM PC/XT in the summer of 1983 for monitoring their loads, to do the utility billing, and for general office tasks as described above. The city's total investment to date has been less than \$10,000 and estimated savings in wholesale power costs during the upcoming year are in the range of \$61,000. Obviously with paybacks such as these, it should be fairly easy for both the staff and administration to justify expenditures of this magnitude.

The shift from an industrially-based economy toward an information-oriented economy began when the price was right. Specifically, . . . with the so-called "computer on a chip."

The city of Seward, Nebraska, has had a very successful voluntary load management program going for two years. The program was developed under the direction of Donald Eikmeier, the city administrator.

With the rapid increase in the cost of electricity experienced during the past decade, the city of Seward became increasingly aware of the cost its electrical users were paying for the luxury of having electricity upon request during the summer months at demand levels often exceeding 100 percent of the demand levels requested during the winter months. It became increasingly obvious that the city could save \$50,000 to \$100,000 a year in wholesale electrical charges if electrical usage could be spread out more evenly during the hot summer days.

Several approaches to load management were evaluated by the city prior to its selection of the quite simplistic system it now successfully uses. The system consists of the following features:

- 1) A microcomputer and software connected to the city's substations from which electricity is fed into the community. The computer displays and prints the demands' of the city on either 5- or 15-minute time periods.
- 2) A historical record of the city's demand in relation to peak temperatures.
- 3) A rate structure which encourages the city's large industrial users to cooperate in the Load Management Program by charging for "demand" based upon their "demand" during the city's peak hour as opposed to the industry's peak hour.
- 4) A public education program among the city's commercial and residential users that explains how minimizing electrical usage during the city's peak demand hours translates into smaller rate increases, if any.

despite increases in the wholesale rates paid by the city.

- 5) A telephone alert/media system operated by city employees.

With the above system in place, on any day when the city approaches peak demand, city employees first contact the large industrial users by telephone. They are contacted first, as well as most often, because they can have the most impact on the city's demands and, of course, because their electrical bill at the end of the month will financially reflect their cooperation.

Word processing functions can be particularly helpful in public administration for preparation, review, correction, and modification of ordinances, routine and special correspondence, and special reports. . . .

If the reductions in electrical demand by the large industrial users is adequate to prevent surpassing the city's present peak, the system has successfully met its task and no further action is necessary. If the demand continues to increase despite the reductions made by the industrial users, the city employees make telephone contact with the next 40 largest electrical users in the city, advising them of the situation and asking for their voluntary cooperating in minimizing usage during the ensuing few hours. In addition, messages are broadcast over the local radio station asking for cooperation from the residential community.⁹

The above description represents a very brief overview of the city's electrical load management system. Total costs for computer, accessory equipment, and software were less than \$21,000. Actual savings as a result of the program's success during the summer of 1982 were \$82,000. Savings as a result of the 1983 summer have been estimated at \$110,000. The city's investment into the microcomputer age has been paid back more than nine times in just two years.

Special Applications

Obviously there are many more tasks and special applications in the public administration area that can be handled easily by microcomputers. Break-even analysis, such as the best time to borrow money for planned utility construction, may be accomplished by a spread sheet analysis. The Nebraska League of Municipalities is planning to use electronic mail for disseminating legislative bulletins on a daily basis regarding legislative action of interest to the cities. Additionally, the league plans to use the computer to conduct surveys which are important to its daily operating and legislative activities such as rate comparisons between utilities, special data requests from the legislature regarding assessed valuation, taxation methods, and others. Other applications could include listings of surplus property for exchange between governmental entities.

Similarly, construction standards for electric or water systems could easily be kept on file and exchanged between utilities. Police departments could keep license plate registrations on the computer, fire departments could keep addresses and other pertinent data at their fingertips. It is perhaps obvious that the list of potential and worthwhile uses is essentially as long as the list of duties to perform in the public administration area.

Hardware and Software

As we noted at the beginning of the article, the hardware and software to perform most or all of the applications previously discussed are readily available today in your local computer stores and the equipment is rapidly becoming more compatible, instead of each machine speaking its own separate language or dialect as was the case prior to the entry of IBM to the microcomputer market. It now appears that IBM is beginning to establish at least a *de facto* standard computer operating system that will allow the interchange of large volumes of software. Additionally, machines such as the IBM Personal Computer are being designed to be upgradeable and compatible with even the largest of the IBM computers so that one may now run software previously designed for the IBM 370 on an IBM Personal Computer (PC/XT370). Additionally, microcomputers can serve as smart terminals to larger machines if they are available. One has only to tap two keys to have access to the whole data base of the larger machine or to return to microcomputer operation for spread sheet analysis, for instance.

Major breakthroughs are presently being made in making the hardware and software more user friendly. One has only to see a demonstration of Apple's Lisa⁶ to see that one has to actually know very little about computers to operate sophisticated word processing, spread sheet, or graphics programs in a matter of minutes or hours.

The applications previously listed are readily available today in a form of master programs that are tailored by the user to perform specific functions. These include spread sheet programs such as VisiCalc,⁷ Multiplan,⁸ Lotus 1-2-3;⁹ word processing programs such as Word Star,¹⁰ Easy Writer,¹¹ Microsoft Word,¹² etc. Data base programs will find much use in public administration areas for tabulating lists of names, things, and numbers such as tax assessments, meter records, voter registrations, etc. Programs of this type included Base II,¹³ R:Base 4000,¹⁴ and others. Special programs such as utility billing programs or for monitoring utility systems are becoming available at very reasonable prices.

Hand Held Computers

The last area we would like to discuss is the use of hand held computers. These are full functioning machines with memory typically ranging from 1.1 to 48k of RAM. There are machines that can cost as little as \$80 to perhaps as much as \$1,000 or more.

Hand held computers are perhaps the most overlooked section of the equipment available today because most of them require programs for specific tasks. Because they program in Basic this is not difficult for anyone who wants to learn about the rudiments of computers and at the same time have a computer to slip in their pocket which will calculate utility bills, debt service, present value/future value, retirement plans, annuities, and make repetitive calculations easily. They can be used for entering meter data in the field and directly down loading to micro or mini computers for billing without having to be translated by hand from meter books to the billing machine.

Conclusion

One can only note that the computer age is upon us and with careful planning and some forethought one can probably obtain very good equipment that will easily pay for itself not only in terms of increased productivity, better management reports, fewer errors in calculations, better monitoring of large expenditures such as in the utility systems, but also be helpful in the routine chores around the office which tend to distract from the overall quality of life. We recommend that one not be afraid of computers but look upon them as something that will make their life easier, better, and more satisfying.

Notes

1. Random Access Memory.
2. International Business Machines.
3. Load Monitoring by Consulting Group-Lincoln.
4. Peak Usage in a given period, e.g., 15-minute period.
5. Not watering the lawn, raising the thermostat settings, delaying laundry chores, or others.
6. Apple Computer.
7. VisiCalc by Visicorp; San Jose, Calif.
8. Multiplan by Microsoft; Bellevue, Wash.
9. Lotus 1-2-3 by Lotus Development Corp.; Cambridge, Mass.
10. Wordstar by MicroPro International; San Rafael, Calif.
11. Easywriter by IBM; Boca Raton, Fla.
12. Microsoft Word by Microsoft Corp.; Bellevue, Wash.
13. dBase II by Ashton-Tate; Culver City, Calif.
14. R:Base 4000 by Microrim Inc.; Bellevue, Wash.

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Local Government Microcomputer Information Systems

William A. Ramsey, Olathe, Kan.

During the past several decades there have been numerous attempts to tie government performance to the annual budget. Usually these have been top-down directed budget systems, such as planning-programming-budgeting (PPB) or more recently, zero base budgeting (ZBB). Both of these systems were applied extensively at all levels of government, but nearly all such efforts have subsequently been abandoned. Why? Is government so different or difficult to manage?

Back to Basics

Government, especially at the local level, traditionally has applied the same basic approach that all organizations have followed in their efforts to be successful. However, as opposed to the top-down influence of budget and management systems, the successful organization today needs to reverse this process and operate these systems from the bottom to the top.

On the surface this may sound like a simple enough tactic to follow, and most managers would undoubtedly agree that one key to successful management and budgeting systems is the maximum utilization of supervisors at the field level. But to accomplish this "simple task" requires the following:

- Supervisors who tend to be self-directed not other-directed.
- An awareness of the mission of the organization, department, and work unit; in other words, "What's the job?"
- An understanding of the tasks, activity, and seasonal work requirements.
- A knowledge of the unit cost for all tasks and jobs.
- The ability to gather the necessary information to track work activity; in other words, how much is being accomplished in work units?
- The development of critical indicators of performance.
- The development of performance standards for each task and job.

Without developing this type of information, most government organizations will usually revert to adding percentages to their budgets or applying a mathematical formula which has nothing to do with the true requirements for accomplishing the stated mission of the work unit.

Computers and Management

What does a work management and budget system have to do with the use of microcomputers in local government? The key ingredient is information. Infor-

mation in today's government is the cornerstone of work management systems, budget systems, and, obviously, management information systems. The problem with collecting organization-wide performance data and then processing it into usable information is that most computers in the past five to 10 years have been used in the finance area. Most local governments have developed efficient data processing departments, but they have applied this capability solely to financial functions. Accounting, personnel, payroll, and utility billing are the primary uses made of most local government computing systems. Consequently, the use of data processing capabilities at the operating department level has been limited; and without the processing power of a computer, it is extremely cumbersome to deal with the large amounts of work performance data generated from the field level. Unfortunately, most local government units still collect and process field operations data manually and simply hope for the best.

In recent years, the evolution of computer technology has now made it possible to deal with the operating departments' data problems. Microcomputers have lowered the cost of information development to the level that any unit of government can now afford one. In addition, advancements in mainframe technology and software development have also helped to enhance the operating departments' decision-making capabilities.

A case in point, where both microcomputers and mainframe improvements have been used to enhance the operating departments management information systems, is Olathe, Kansas. Located in Johnson County, a metropolitan suburb of Kansas City, Olathe has experienced tremendous population growth in the past decade. In the mid-seventies the decision was made to decentralize Olathe's council-manager government. Extensive responsibility and authority was delegated to the operating departments for day-to-day management responsibilities, with a requirement that management information reports be forwarded to the city manager's office on a timely basis. Due to this increased responsibility, department managers started to review their operations thoroughly and, as a result, it became apparent that a number of changes would be required in order to track the critical activities. In the public works department one of the first problems that needed to be addressed was the adequacy of the existing Equipment Management Information System.

The resulting study of the Equipment Management System indicated that a computer would greatly relieve

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many of the problems. The use of the city's mainframe was out of the question, due to backlogs; moreover, since the equipment manager was the only person who really needed the information, the decision was made to use a stand-alone microcomputer. Relatively speaking, the capability offered by a single microcomputer was revolutionary. For the first time in the history of the public works department, the operating cost for each vehicle would be known. Downtime, the availability of the fleet as expressed in a percentage, the monthly cost of fuel, spare parts, and labor would also be available. Information designed for the use of the field supervisors, also was available.

The use of the microcomputer also has resulted in changes within the organization. Supervisors have perceived a different role for themselves. Previously they thought of themselves as day-to-day working superintendents. Their presence was necessary to make work happen. By providing them with information and expecting them to make decisions at their level, they began delegating to their field foreman. They started to analyze their operations in a new light. For several, the transition from working superintendent to managing supervisor was not easy. But all have successfully made the transition and have strengthened their operations by it.

Another positive change in the public works department resulting from the need to develop new management systems was the complete and thorough analysis that had to be made of the old service systems. In many instances this revealed that no formalized system existed at all, but in all instances departmental supervisors and their field foremen came away from this system-forcing process with a better understanding of how to analyze and evaluate their respective work efforts.

The Right Climate

Olathe's experience in using a microcomputer to improve the information system of its public works department is a result of the organizational climate. In the early planning stage, the use of a microcomputer was viewed as one of many tools to be used and not as a panacea for all of the problems. Top management supported the use of a microcomputer from the beginning and, as such, this reinforced the idea that information needed to be generated at the working unit level. By concentrating on developing the mission statement and setting priorities for work requirements, information reporting systems were tailored to the specific requirements.

The first microcomputer was installed in Olathe in 1980. The city now uses six microcomputers and a large mainframe for its information and decision support systems. In the past three years the following management systems have been developed for support of the public works department:

- **Vehicle Management System**

Tracks vehicle cost by month, year, and lifetime to-date for fuel, oil, parts, outside repairs, labor, and

tires. Computes an operating cost per mile, provides monthly cost reports for each department, and provides the Finance Department with billing information. Tracks vehicle work orders and prepares a lifetime repair history file in addition to many other activities. Equipment manager now tracks the fleet on a real-time basis.

- **Parts Inventory System**

Tracks vehicle parts. Lists utilization and provides information at the end of the year on zero use line items. Tracks tire inventory against known tire requirements which are generated by the V.M.S.

- **Oil Analysis**

Tracks oil analysis reports for each vehicle in the fleet.

- **Sanitation Roll-off System**

Tracks large roll-off refuse containers by job site and customer. Provides for billing at the end of each month as well as container utilization.

- **Sanitation Commercial Routing Balancing System**

Tracks all commercial refuse customers. Provides route information and assists in balancing routes by number of containers, number of customers, and total amount collected. Will recommend sequence of pickup by route and day.


- **Work Management System**

Tracks work activity completed by jobs, tasks, activities, location, cost, performance standards, and combination of other requirements. Assists supervisors in work scheduling and developing work programs. Program is used by street maintenance, sanitation, park maintenance, and utility maintenance supervisors.

- **PAVER—Pavement Evaluation System**

Tracks street pavement condition on a block-by-block basis. Analyzes maintenance strategies based on pavement maintenance policy and recommends various maintenance alternatives.

These programs are just the beginning in supporting field supervisors with the information they need, but already it is apparent that in the next decade systems will create the need for even more significant developments in management information systems. The challenge of meeting that change will be to work harder and smarter, to be more efficient, and, most of all, to be more effective. Effectiveness can best be achieved through the improvement of middle management at the operations level and to develop information systems that move from the bottom to the top of the organizational units. And the improvement of information systems for those managers can only hasten the improvement of local government in the United States.



Administrative Uses of Computers

Report of a Survey of ASBO Members

By Judy Touchton

As the chief business official at their school district, ASBO members are intimately involved in school administration. With the task of the administrator growing steadily more complex and automation more affordable, ASBO members are increasingly turning to computers to make school administration more productive and efficient. But as anyone involved in the purchase and installation of a computer can attest—it is no simple task.

From preparation of the RFP to selection of a computer and software to installation, training and assimilation, each step can be a challenge even to an experienced professional. To the novice, automation can seem like an insurmountable task with satisfaction being only a distant dream.

Many of our members have successfully cleared the hurdles and are realizing the benefits of increased productivity and efficiency. No doubt the lessons they learned could prove valuable to other members who have not been through the process before or are automating for the first time.

In the spring of 1987 the Association of School Business Officials International conducted the first full-fledged automation survey of its members. The survey seemed an ideal vehicle for collecting information about the degree of automation of ASBO members, their satisfaction and the range of applications software available. The survey also served as a means to gather and convey lessons learned by experienced users so members automating for the first time need not repeat their mistakes.

Methods and Response

The survey was pre-tested over the telephone with members of ASBO's Data Processing Research Committee. Because of the pre-test and valuable input from the committee members, the survey was changed extensively before it was released. The final version was a 12-page survey with 31 questions. It was sent out in two separate mailings to a total of 4,129 ASBO members. At the time, ASBO membership totaled 5,369 school

officials in the United States and Canada. Those not receiving the survey generally were either not affiliated with a school (e.g. consultants, corporations and state education agencies), were living in a foreign country other than Canada or resided in a school district where more than one official belonged to ASBO. The unduplicated response was strong with 3,047 or 74 percent of the surveys returned.¹ While the project brochure and letters described the survey as covering public schools in the United States, responses from both public and private schools both in the United States and Canada were included. ASBO is an international organization of school business officials and we did not intend to imply otherwise.

The survey results by question appear on the following pages. Most percentages are as a percent of 3,047 and all add to 100 percent since the number not answering the question is also shown. In some cases (Q-2, Q-4, Q-6, Q-7, Q-10, Q-13, Q-19, and Q-21), the units sum to more than 3,047 due to multiple answers to a single question. The terms in the parentheses are the number of ASBO members who chose that particular answer. Some questions (Q-8, Q-12, Q-17) do not show any response data because the responses were too varied to compile.

Please note that no tests for statistical significance were conducted and the results are subject to the biases of the sample; so, for example, 37 percent of returned surveys were received from IL, MI, NJ, NY, PN since 38 percent of the surveys were sent to those states.

General Background Information

Questions 1 through 8 dealt with background information.

Most respondents (68 percent) represent districts with between 1,000 and 9,999 students. Ninety-five percent use a computer for

administrative tasks which was installed after 1980 (64 percent) that is located within the school district (62 percent) and is not used for student instruction (80 percent). This administrative computer is approximately equally likely to be a mainframe, minicomputer or microcomputer.²

Not surprisingly a great percentage of respondents use a fairly large computer (minicomputer or mainframe) for administrative tasks since most of the districts responding are fairly large and so might be expected to have a pressing need for automation. However, the small number of computers installed prior to 1980 is surprising. Either automation is a relatively recent phenomenon in schools or respondents regularly replace the existing computer with a newer model. The latter is likely since growing needs and increased maintenance charges force schools to move to larger, newer computers.

The relatively small number of respondents using service bureaus is also unexpected given the number of state-run consortiums such as BOCES in New York. However, this could also be due to ambiguity in the question since those using a state-run consortium may have answered Q-2 "In another school district."

IBM and DEC's prevalence in the data processing industry carries over into school districts as well with 39 percent of respondents reporting that they use an IBM computer for administrative tasks. The gap between IBM and its competitors is quite large, with IBM having more than three times the number of installations of its closest competitor, DEC.

Specific Background Information

Questions 9 through 17 asked specific background questions.

Respondents preferred to purchase the software from an outside vendor (33 percent) or to purchase

¹ Unduplicated means that no two surveys are included from the same person, school or district name. It would not exclude two surveys showing different school names but belonging to the same school district.

² Interestingly, only 452 respondents use only a microcomputer for administrative tasks, while more than 800 use a microcomputer in conjunction with a minicomputer or mainframe.

both the computer and the software from the same vendor (24 percent). In most cases multiple schools are connected to a central computer (8 percent) with 10 or fewer terminals (51 percent). As might be expected, the software applications packages in use are primarily student (grades, attendance, scheduling records) or financial (accounts payable, payroll, general ledger, budget preparation, check register, personnel, accounts receivable). The software vendor with the most installations was J&K with a wide range of other vendors also showing five or more customer sites. Many respondents budget between \$5,000 and \$49,000 per year for computer and software purchases (8 percent). The distribution of the original amount spent on the computer and software was wide and a large portion of respondents (30 percent) either didn't remember the original cost or skipped the question entirely.

Automation among ASBO members clearly isn't confined simply to accounts payable and attendance. There are a wide variety of applications software packages installed and an equally large number of suppliers. The strong foothold that automation has among respondents is supported by substantial annual expenditures on computers and software.

Satisfaction

Questions 18 through 21 attempted find out how satisfied users were with their systems.

While most respondents use a computer for administrative tasks and seem to have a wide range of applications software products installed, the real question is whether school business officials are pleased with their investments. An overwhelming percentage of respondents (82 percent) indicated that the computer performs as they expect it to and a comparable percentage (75 percent) reported that the software performs similarly. The most common complaint about software was that it had not evolved to meet current needs (10 percent).

Purchase Plans

Questions 22 through 30 asked about purchasing plans.

Most respondents (59 percent) are not planning to purchase a computer; however many respondents are planning to purchase (22 percent) and will spend between \$5,000 and \$49,000 (11 percent) or \$50,000 or more (9 percent) sometime in the next 12 months (17 percent). Of those who will be purchasing a computer most (16 percent) have not selected a vendor. A large percentage plan to purchase software (22 percent) in the next 12 months (20 percent). Spending on the software will be less than spending on the computer with about 19 percent reporting that they will spend \$49,000 or less. As with the purchase of the computer, approximately 16 percent of respondents have not yet selected a vendor. Most (9 percent) report that they do not know whether the computer and software will be purchased from the same vendor.

In total, ASBO members plan to spend approximately \$55 million dollars on computers for administrative tasks and \$29 million on software and peripherals with the bulk of that spending occurring within 12 months.

Analysis

While the responses to the individual survey questions are important, just as interesting are the numbers of respondents giving particular answers to more than one question.³ Table 1 shows a graph of the answers to questions 5 and 6—the type of computer that districts of various sizes have installed. Smaller districts are more likely to use microcomputers for administrative tasks, with the largest number of districts using such computers having an enrollment of 1,000 to

2,499 students or fewer. The number of districts using microcomputers for administrative tasks declines rapidly as enrollment increases above 2,499 students. The number of districts using minicomputers or mainframes for administrative tasks peaks at an enrollment size of 2,500 to 4,999 students and declines comparatively slowly as enrollment size increases.

Why would any district with 1-249 students report use of a mainframe for administrative tasks? Either the respondents answered incorrectly, do not know what a mainframe computer is or they use a central service which owns a mainframe.

Table 2 shows the answers to questions 5 and 24—how much districts of different sizes plan to spend. Districts with 4,999 or fewer students are more likely to spend \$99,000 or less on a computer for administrative tasks. The spending of districts with 5,000 to 9,999 students is approximately evenly distributed, while the spending of districts with 10,000 or more students enrolled is likely to be more than \$100,000. This data roughly corresponds to the information in Table 1 with districts of 2,499 students or less being more likely to have a microcomputer and spend \$5,000 to \$24,000 on a new computer. Larger districts are more likely to have a minicomputer or mainframe installed and will spend more for a new computer.

Table 3 shows the percentage of people answering questions 7 and 19. If answers to question 19 serve as a measure of satisfaction then answers to questions 7 and 19 serve as a rough measure of vendor satisfaction. It is only a rough measure because some of the answers to question 19 have nothing to do with the vendor, e.g. experience of technical staff, yet would still be counted in Table 3. The average is about 10 percent with more users indicating satisfaction with Hewlett-Packard and Prime computers.

The data on these tables should not be considered conclusive since no tests were performed for statisti-

³ Tables 1, 2 and 3 show the number of respondents answering more than one question. However, it only includes respondents selecting a single answer to any of the questions. For example, if a respondent circled more than one answer to question 6 these responses would not be included in Table 1 or 2. Therefore, the totals on the tables will not correspond to the totals for the individual questions.

cal significance. However, the information could provide a general guideline to districts of various sizes on the size of computer to acquire and the amount to plan to spend.

Comments by Respondents

Many respondents took the time to enter additional comments at the end of the survey. The comments generally either highlighted areas where the survey was deficient or focused on factors the respondent thought were particularly important in assuring the success of their automation effort. It is this section of the survey that may provide the most useful information to readers because together the suggestions give a rather comprehensive guideline for the acquisition of computers and software, a guideline which could prove helpful to novices and experienced administrators alike. In general, the suggestions fall into four categories: prerequisites, de-

termination of needs, retaining a consultant and software selection. A final category covers respondent warnings on pitfalls to avoid.

Prerequisite

To numerous respondents the success of their automation effort depended as much on internal factors as it did on the vendor. Specifically, three requirements were suggested. First, a computer manager should be designated. The success of an installation depends critically on having someone present at the site to oversee implementation and ongoing operations. "You must have someone in this position who is dedicated and is willing to get involved in detail. . . ." What is important is not that they have a technical understanding of what is going on, although that would certainly help, but that a single person assume responsibility for the project.

Second, plans should include an

in-house data processing staff. Although respondents did not elaborate on why they felt the in-house staff was important, it seems likely that the staff's purpose was to ease the transition to an automated system by supplementing the efforts of the vendor involved. Customization of packaged applications software products to cushion the impact of the system on established policies and procedures and day-to-day operation of the system (back-ups, etc.) are two possible functions.

Third, "... you must have a board of education that is willing to spend money to keep up with change and shifting needs." A system is seldom stationary, the applications multiply, more departments become involved and the technology changes. Without a continuing commitment to automation by budgetary officials, the system cannot grow to meet user needs.

At first glance, the three prerequisites may seem more relevant

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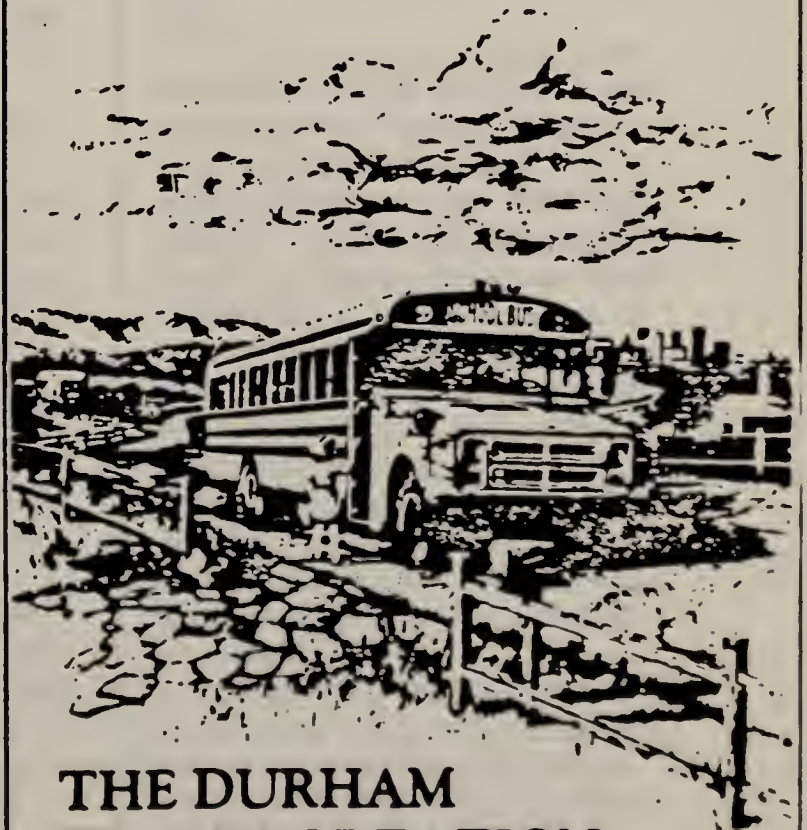
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larger school districts than to smaller ones. After all, there seems to be a need for a computer manager, a processing staff and a multi-member board of education if the administrative computer is a personal computer with two or three applications installed. But that's not entirely true. While the administrator using the personal computer to perform the chores of a computer manager, it is unlikely that the same person can customize the system. As he or she discovers the capabilities of the computer and sees in other departments realize what it could do for them, there will be demand for more personal computers and additional applications software. The point is that regardless of the size of the district, the underlying needs—for someone to do back-ups, for customized modifications, for money to spend—are similar. With smaller districts some of those needs can be met by someone wearing more than one hat but in larger districts these needs will be met by distinct people. Regardless of size, it is important to consider how to meet those needs before beginning the computer acquisition process.

Determining Needs

After ensuring that the prerequisites exist the next step is the determination of needs—"A study of who does what work, when and why will save much time and money in deciding what kind of equipment (to choose) and what it needs to do." Another respondent said, "Before purchasing our computer, we surveyed all staff and board members on their expectations or needs on the new data processing system. Although laborious it helped to accomplish two goals:

The survey brought to light uses the committee had not thought of. It gave ownership early on to the board and made the package easier to sell."

Adequate time spent determining needs is critical, for business officials cannot acquire a computer and applications software and expect it to meet user needs and expectations if there is no knowledge beforehand of what those needs and expecta-

tations are. As the respondent above pointed out, it is likely that the process of defining needs and expectations will reveal unanticipated applications. The process can also involve most potential users in the planning and acquisition decisions thus allowing them to participate in the acquisition of the computer instead of having it suddenly thrust upon them. Participation by affected groups and a thorough search for needs and expectations allow the administrator to prepare a detailed list of requirements. An extensive search for needs and wide participation ensure that the administrator's list is the best possible standard for judging the adequacy of computers and applications software.

Retaining a Contract

Defining needs and developing the RFP is a time-consuming and complex process which is why many respondents believe that retaining an independent consultant is a necessary step in a successful computer installation. The consultant will do the leg work necessary to uncover needs and expectations. The consultant's familiarity with the technology will allow the district to expand upon and enhance those needs based upon the state of the art. In some cases, the automation task may turn out to be either too costly or too complex to complete in a single year. If the objective is to create a multi-year implementation plan, the consultant can be invaluable since the important thing is to, according to one respondent, "Develop a five-year plan and stick to it. Implement one program at a time, get it working before another program is tried. Don't bite off more than you can chew." The consultant can help to structure the plan so it is achievable given your district's constraints.

While many districts may recognize that they need a consultant, finding a good one can take time. It is important for the consultant to understand not only the administra-

tive needs of the district but also have a firm grasp of computer systems, software, networking and the other technical aspects of the installation. A failure on the part of the consultant to understand either the needs or the technology could lead to an installation that isn't nearly as functional as it might have been.

Software Selection

Once needs are determined and a consultant is retained the software selection process can begin. A large number of respondents emphasized the importance of selecting software before choosing a computer. "Find a Software package to meet (your) total needs then buy the hardware it runs on." This approach makes sense since what an administrator is purchasing is a solution to an administrative problem, whether that is faster correction of errors in typed documents or a more productive method of scheduling students. What provides those solutions is primarily applications software, not a particular brand of computer. Buying the software is not an easy task and a number of respondents made useful suggestions.

■ "Demand a very rigorous demonstration" of the software so that you can see for yourself whether or not the software will meet your needs and expectations. Realizing that "To expect a perfect match from a packaged product is utterly unrealistic . . . a school district of over 10,000 students should expect to invest heavily in customization, either by having its own staff or purchasing customization from the vendor, if it expects to receive full benefits . . . the very fact that we could customize the software was a point in its favor when bids were evaluated."

■ Talk to many "current users of the product without the presence of sales representatives. Ask them to critique the system and the vendor. Make sure you can live with the shortcomings of both before you buy."

■ If possible purchase the computer and software from one supplier." If you can buy both from a single vendor you will be able to

resolve any future difficulties faster by avoiding situations where the computer vendor blames the applications software vendor and vice-versa for any problems that may arise.

■ Be sure that the vendor "... provides timely support as well as ... user-friendly documentation." Early in the acquisition cycle the focus is likely to be on simply finding a vendor with software that meets the district's needs and expectations. However, once the applications software is purchased and installed, the other services the vendor provides, such as documentation and support, will become increasingly important. A preoccupation with the applications software should not obscure the significance of these other services.

■ While it is unlikely that any vendor can fulfill all of a district's needs and expectations, realize that once a contract is signed it serves as the sole standard for judging a vendor's performance. "Put expectations in writing and require the vendor to agree to an established implementation time line before signing anything." If the district requires a feature or service not in the vendor's product, be sure the requirement appears in the contract, otherwise there is no way to insure its implementation.

■ "Watch out for hidden or overlooked costs." Installing a computer can be expensive and it is easy to forget about costs such as computer and applications software maintenance fees and the installation of telephone lines for data transfer. While the administrator may not feel qualified to anticipate such costs, they will not escape the attention of an experienced consultant.

Pitfalls

Respondents also pointed out some pitfalls administrators should be aware of when they install a computer.

The first is "reinventing the wheel." One respondent reported that many districts spend far more than is necessary for an adequate system because they try to develop their own applications software.

The point here was made earlier, that is that no system is likely to meet all of a district's needs and expectations. An administrator should find a system that meets most of the district's requirements and then pay careful attention to the vendor's willingness to enhance the software or how likely the in-house staff can perform the necessary modifications. This solution will likely be far faster and much cheaper than trying to develop an entirely new system.

Another respondent wrote, "Unfortunately, the computer sits idle most of the time because we don't have enough staff to free up time to learn to use the computer." This statement dramatizes the importance of exhaustively identifying needs and the significance of the other services a vendor can provide. Clearly, a district's personnel needs to be trained to operate the computer and applications software, the vendor ought to provide the service and the budgetary officials should have the commitment to ensure that the staff is properly trained. When a component is missing the potential exists for a very wasteful situation.

A successful automation effort is not without hurdles. For example,

one survey comment was, "Computerization speeds up the availability of accurate information but it also attempts to satisfy unbridled appetites for trivial information previously regarded as insignificant or a wasteful use of employee time." Another respondent wrote, "Once the staff sees what a computer can do for them, the requests for more hardware and software come in a flood." These comments speak to the importance of developing an automation plan instead of simply acquiring a computer and applications software for a particular task. The district can expect that the system they install for a particular set of tasks will grow as people use the computer more intensively to complete foreseen tasks and it will grow as new tasks and applications are identified.

Haphazard growth is risky because if the careful, considered process used to acquire the initial computer and applications software is brushed aside in favor of piecemeal acquisitions, there is a danger that automation will create more problems than it solves. A planned approach ensures that the system will continue to meet the needs and expectations of users even as requirements grow and change.

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Summary
The survey results from the individual and combined questions provide a great deal of descriptive information. The information combined from the additional comments section of the survey complements other data since it gives step-by-step suggestions on acquiring a computer as well as pitfalls to avoid. Despite all the pre-testing and careful thought given to the survey's development, some respondents identified areas of the survey they thought were weak. Those comments focussed predominantly on question 2 and the directions following question 8. The problem with question 2 was that no answer accurately described some data centers. Evidently, many

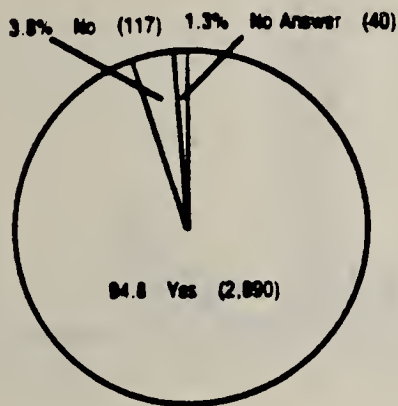
respondents experienced this problem since so many selected "Other" as an answer to both questions 2 and 13. Some respondents went even further and said the entire survey was too general for "established" data centers. These observations are welcome and they will be used to improve future surveys; however, it is important to realize that by increasing the number of questions and answers to more accurately describe small and large, new and established data centers, the response rate would probably have declined as some respondents became discouraged by the survey's detail.

Another concern was the focus following question 8 on the larger computer used for administrative tasks. As one respondent observed, "Restricting responses to the primary computer limits (your) grasp of computerization because so much is being done on microcomputers now, even by those of us with mini or mainframe computers." In our effort to focus on what was currently installed, we ignored a number of issues that might have shed further light on trends in administrative computer use. We will try to remedy this in a future survey.

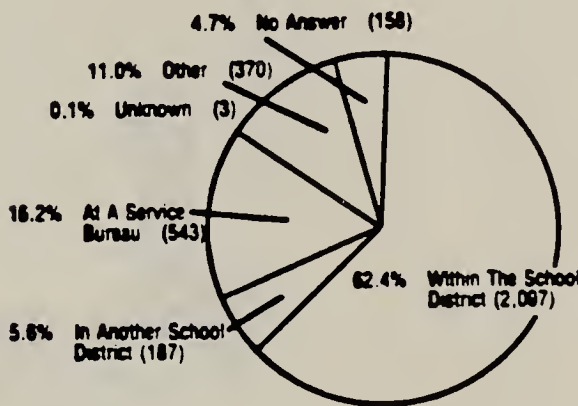
ASBO's first automation survey hopefully provided useful information: information about what computers and applications software is out there, what similarly sized districts are using, how satisfied the districts are with their systems and the steps to follow in acquiring a computer and applications software. Without your participation it would not have been possible to conduct the survey. Thank you for your input. □

Survey Questions

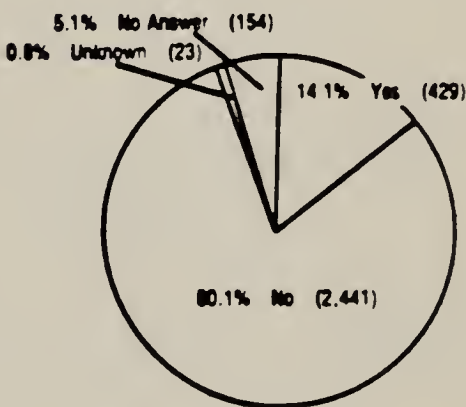
Q-1 Does your school district presently use a computer to complete administrative tasks such as payroll, accounts payable, student records, etc.?



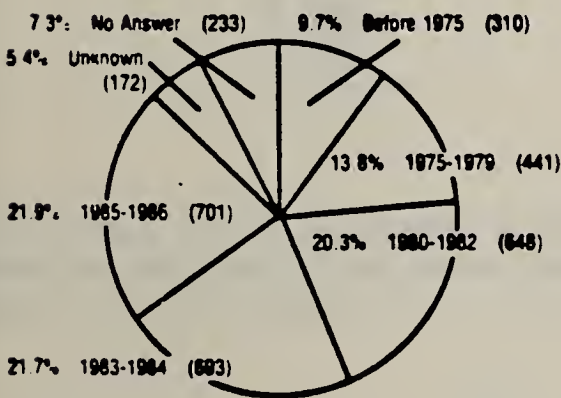
Q-2 Where is the computer that your district uses for administrative tasks?



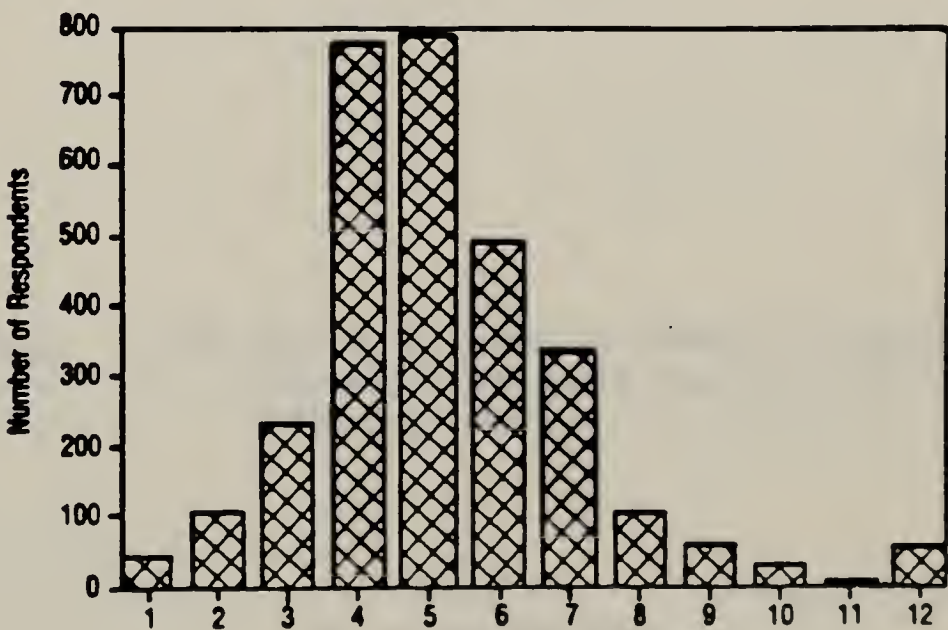
Q-3 Is the computer your district uses for administrative tasks also used for student instruction?



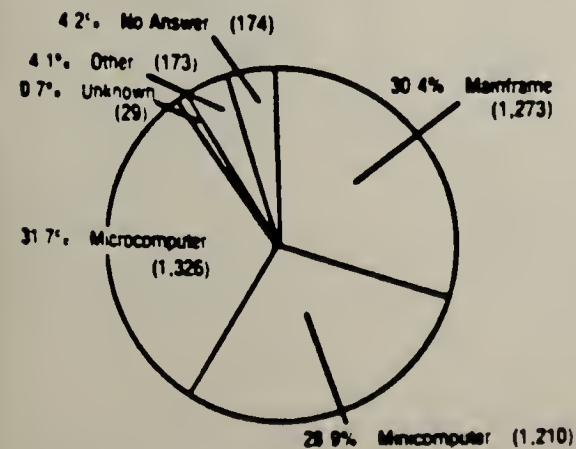
Q-4 When was the computer your district uses for administrative tasks installed?



Q-5 How many students are in your school district?

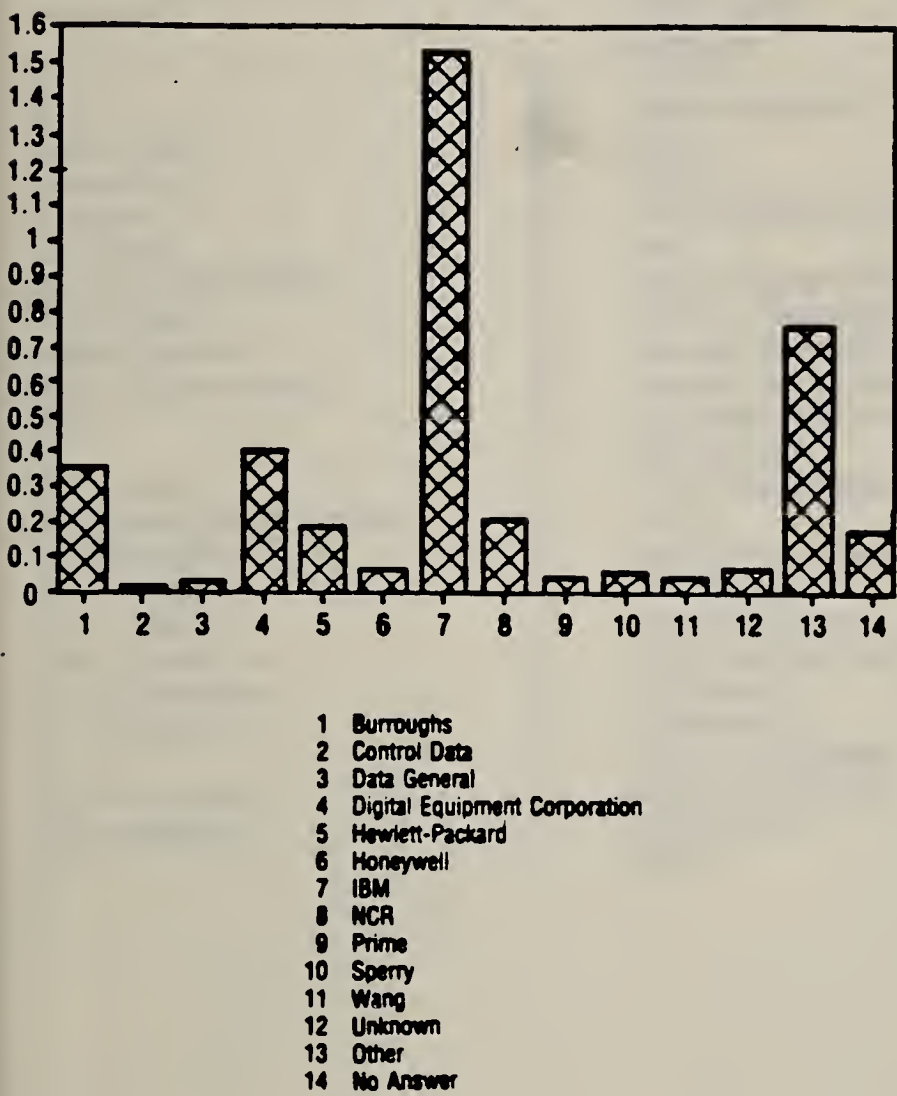


Q-6 What type(s) of computer does your district use for administrative tasks?



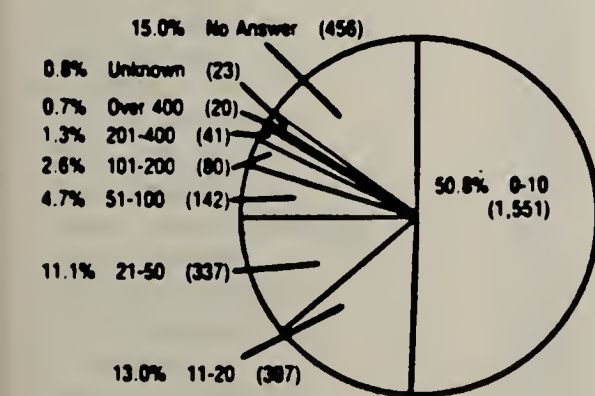
| | | | |
|----|---------------|---------|-------|
| 1 | 1-249 | (1.3%) | (41) |
| 2 | 250-499 | (3.5%) | (108) |
| 3 | 500-999 | (7.6%) | (231) |
| 4 | 1,000-2,499 | (25.6%) | (780) |
| 5 | 2,500-4,999 | (26.1%) | (794) |
| 6 | 5,000-9,999 | (16.1%) | (492) |
| 7 | 10,000-24,999 | (11.1%) | (339) |
| 8 | 25,000-49,999 | (3.5%) | (108) |
| 9 | 50,000-99,999 | (2.0%) | (61) |
| 10 | Over 100,000 | (1.0%) | (30) |
| 11 | Unknown | (0.2%) | (5) |
| 12 | No Answer | (1.9%) | (58) |

What brand(s) of computer do you use for administrative tasks?

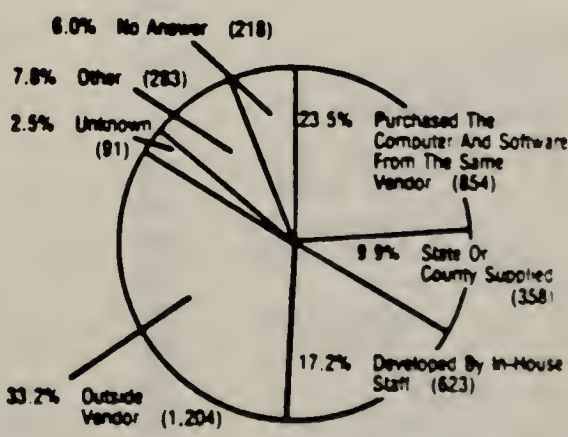


Q-8 What model computer(s) do you use for administrative tasks (for example, System 36)? (Responses too varied to compile.)

Approximately how many terminals in your school district are connected to the system your district uses for administrative tasks?



Q-10 How did you obtain the software (or computer programs) for the system your district uses for administrative tasks?



Q-11 If your district's software was purchased from an outside vendor, which vendor was it?

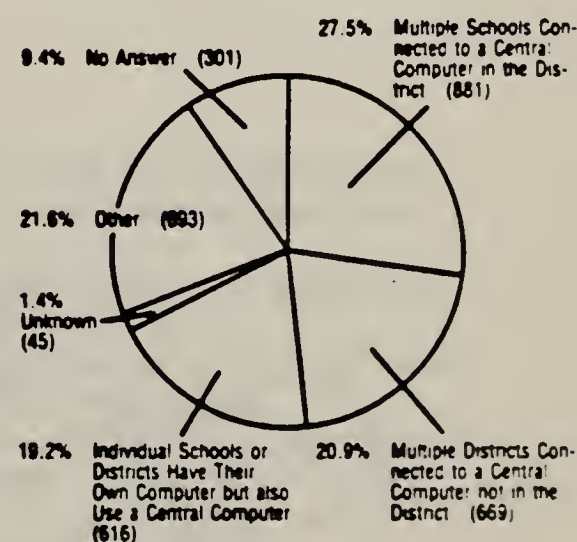
(Shown are vendors cited by five or more respondents)

| | |
|----------------------------|-----|
| J and K | 135 |
| IBM | 63 |
| Software Plus | 42 |
| Weiden Corp. | 36 |
| Burroughs | 33 |
| Pentamation | 33 |
| Specialized Data Systems | 31 |
| Ace Software | 23 |
| Pertaine Systems | 23 |
| Midwest Systems Group | 22 |
| Avatar | 19 |
| C.C.L. | 16 |
| CRT Company | 16 |
| Management Science America | 16 |
| Mentor Systems | 16 |
| Systems Eleven | 16 |
| Carter Schaeffer | 15 |
| Central Systems Inc. | 15 |
| Century Consultants | 15 |
| Computerland | 15 |
| E.D.P. | 15 |
| Innovak International | 14 |
| SRB International | 14 |
| NCR | 12 |

| | |
|-------------------------------|----|
| Howard Guess and Associates | 11 |
| School Admin. | 11 |
| Komputrol | 10 |
| MASBO | 10 |
| Software Unlimited | 10 |
| Infocel | 9 |
| Infomatic | 9 |
| Texas Educational Consultants | 9 |
| Aries | 8 |
| Digital Equipment Corporation | 8 |
| Keystone Information Systems | 7 |
| American Management Systems | 6 |
| Computer Solutions Inc. | 6 |
| Educational Software Systems | 6 |
| GMT Research | 6 |
| Rands Data Systems | 6 |
| A.S.D.I. | 5 |
| Beck Computer Services | 5 |
| Data Control | 5 |
| Delta Management | 5 |
| Educational Data Services | 5 |
| Eff. Software | 5 |
| Gloucester Co. | 5 |
| McCormack & Dodge | 5 |
| Molnar & Associates | 5 |
| Radio Shack | 5 |
| WSIPC | 5 |

Q-12 In what state and/or city is the software vendor located? (Responses too varied to compile.)

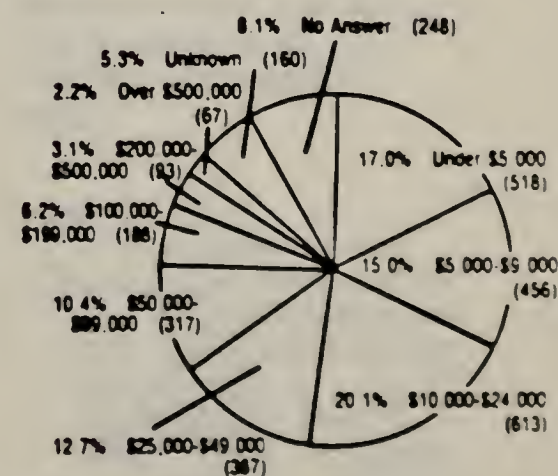
Q-13 How is the system your district uses for administrative tasks arranged?



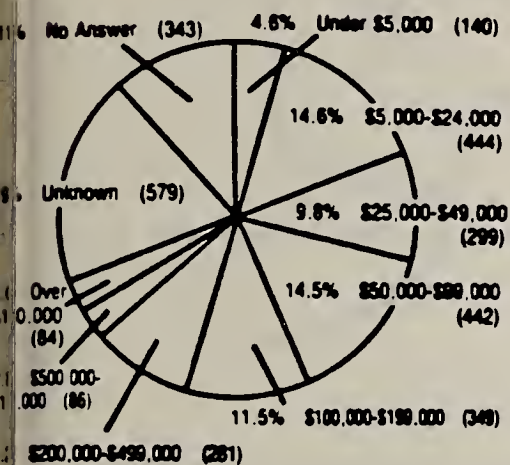
Q-14 What applications does the computer your district uses for administrative tasks automate?

| | | | |
|---------------------------|-------|--|-----|
| Accounts Payable | 2,650 | Negotiation | 680 |
| Payroll | 2,566 | Student Testing Management | 550 |
| General Ledger | 2,362 | Property Control | 532 |
| Budget Preparation | 2,314 | Bus Routing/Transportation Management | 517 |
| Check Register | 2,125 | Master Student Scheduling Using Rotating Schedules | 504 |
| Personnel | 1,907 | Electronic Mail | 497 |
| Accounts Receivable | 1,789 | Bus Fleet Maintenance | 348 |
| Grade Reporting | 1,707 | Bid Analysis | 338 |
| Student Attendance | 1,681 | Facility Scheduling | 306 |
| Master Student Scheduling | 1,611 | Electronic Calendar | 302 |
| Student Records | 1,501 | Library System | 282 |
| Check Reconciliation | 1,409 | Locker Assignment | 282 |
| Word Processing | 1,357 | Automatic Absentee Call Back | 221 |
| Purchasing | 1,295 | School Maintenance Scheduling | 191 |
| Fixed Asset Inventory | 1,293 | Integrated Graphics | 146 |
| Inventory System | 1,121 | Other | 145 |
| Spreadsheet | 990 | Boards and Councils Tracking | 89 |
| Food Services | 923 | Unknown | 9 |
| Special Education | 747 | | |
| Teacher Scheduling | 708 | | |

Q-15 Approximately how much is budgeted annually for computer and software purchases?

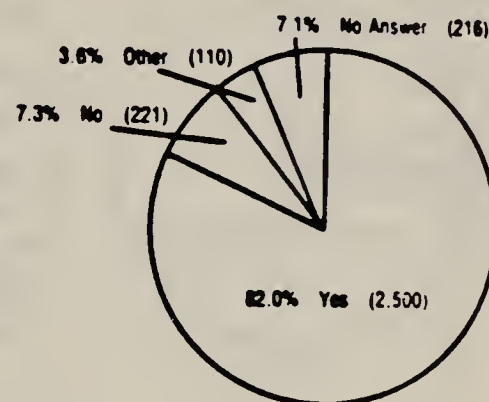


Q-16 What was the original cost of the computer and software?

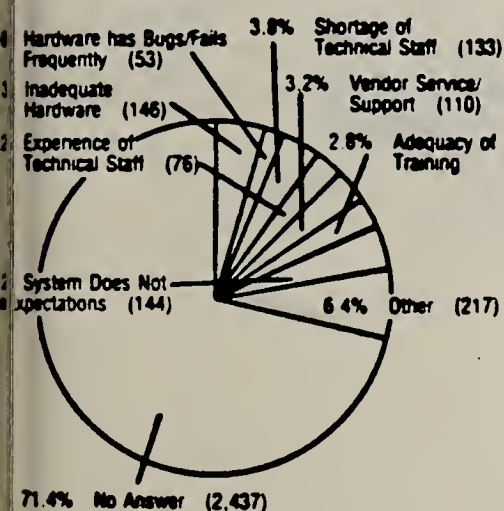


Q-17 If possible, please break down the original cost of the computer and software. (Responses too varied to compile.)

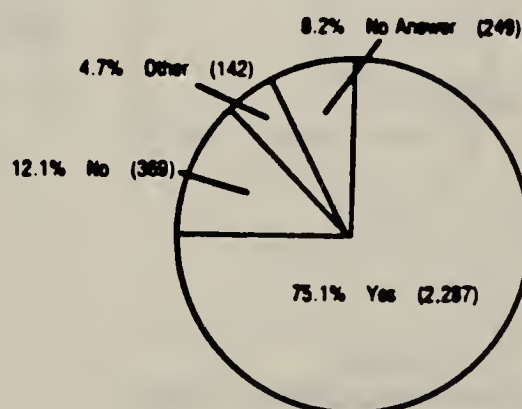
Q-18 Does the computer your district uses for administrative tasks perform as you expected/expect it to?



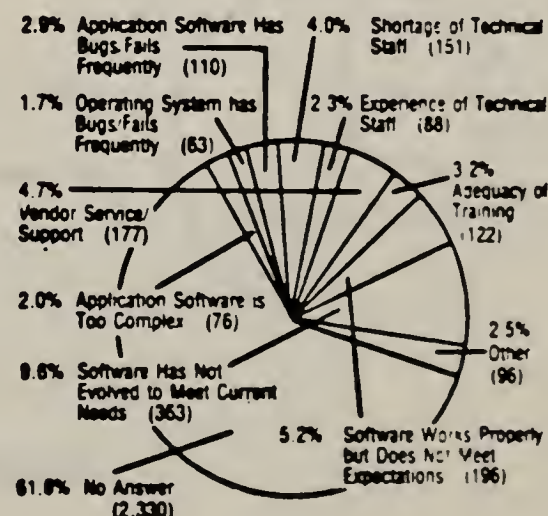
Q-19 If you are not satisfied with your current hardware, why?



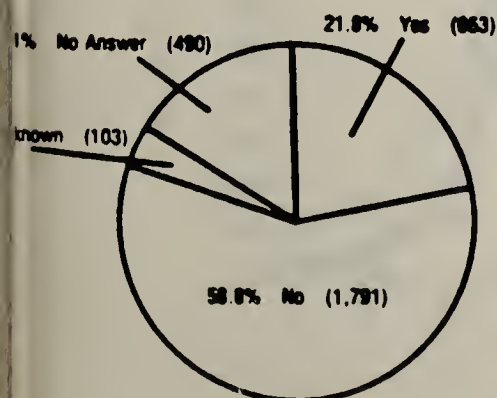
Q-20 Does the software your district uses for administrative tasks perform as you expected/expect it to?



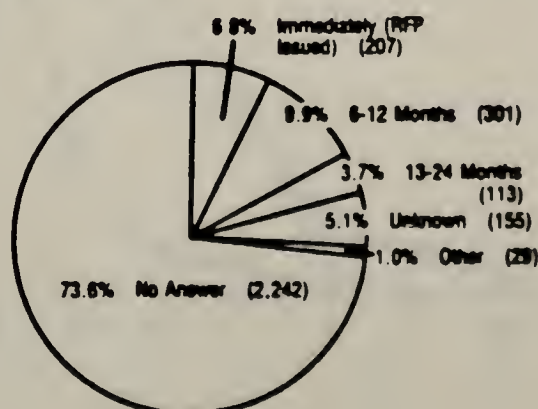
Q-21 If you are not satisfied with your current software, why?



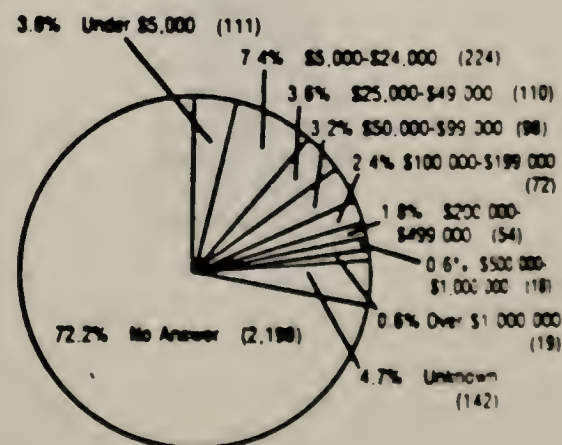
Q-22 Is your school district presently planning to purchase a computer for administrative tasks?



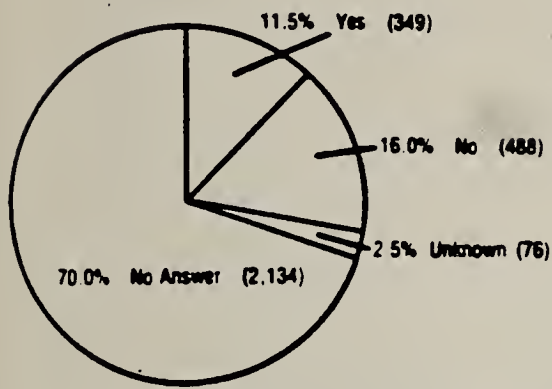
Q-23 When do you plan to purchase the computer?



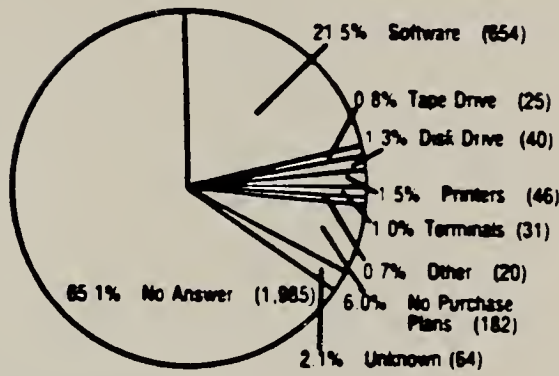
Q-24 How much does your district plan to spend on the computer for administrative tasks?



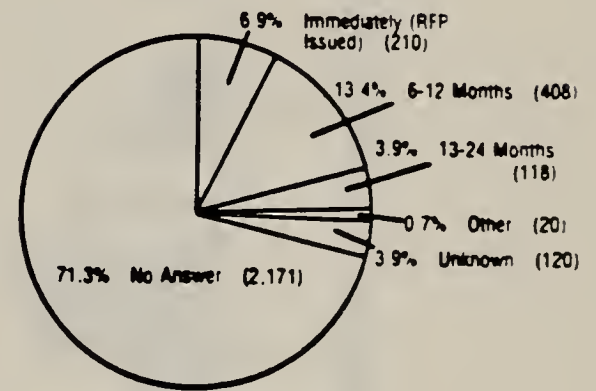
Q-25 Have you already chosen a vendor for the computer?



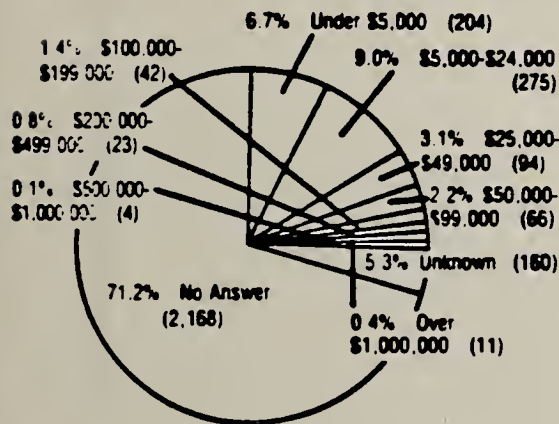
Q-26 Are you planning to purchase any of the following?



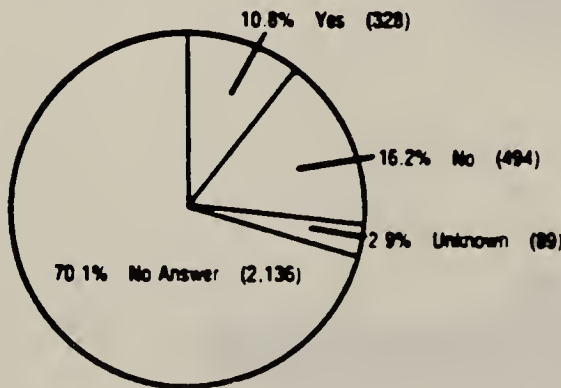
Q-27 When do you plan to purchase the software/peripherals?



Q-28 How much does your district plan to spend on the software/peripherals?



Q-29 Have you already chosen a vendor for the software?



Q-30 Will the computer and software be purchased from the same vendor?

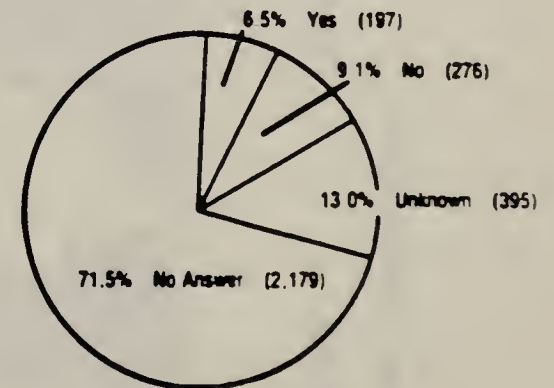
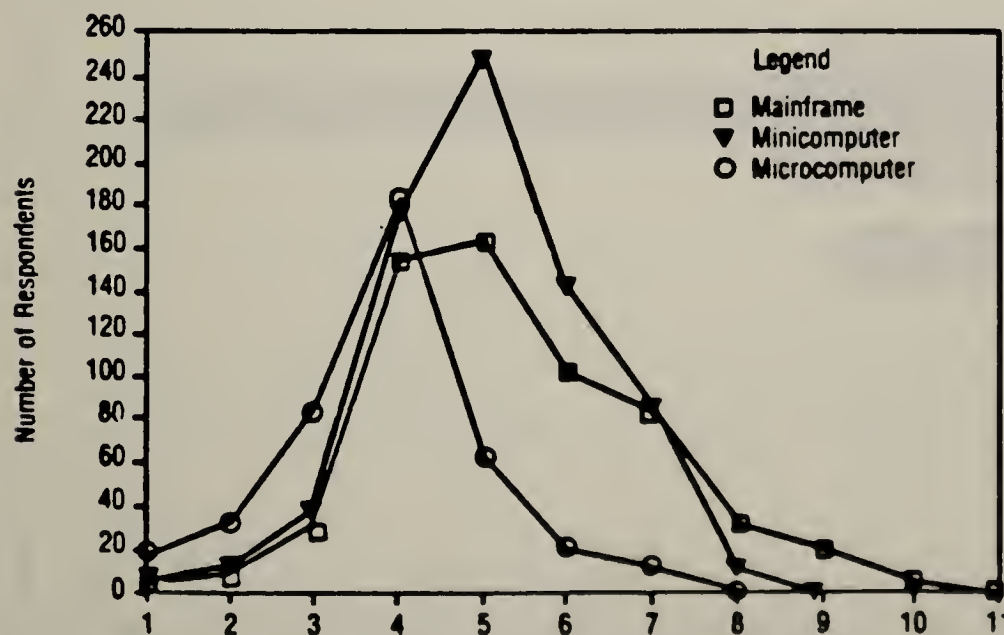
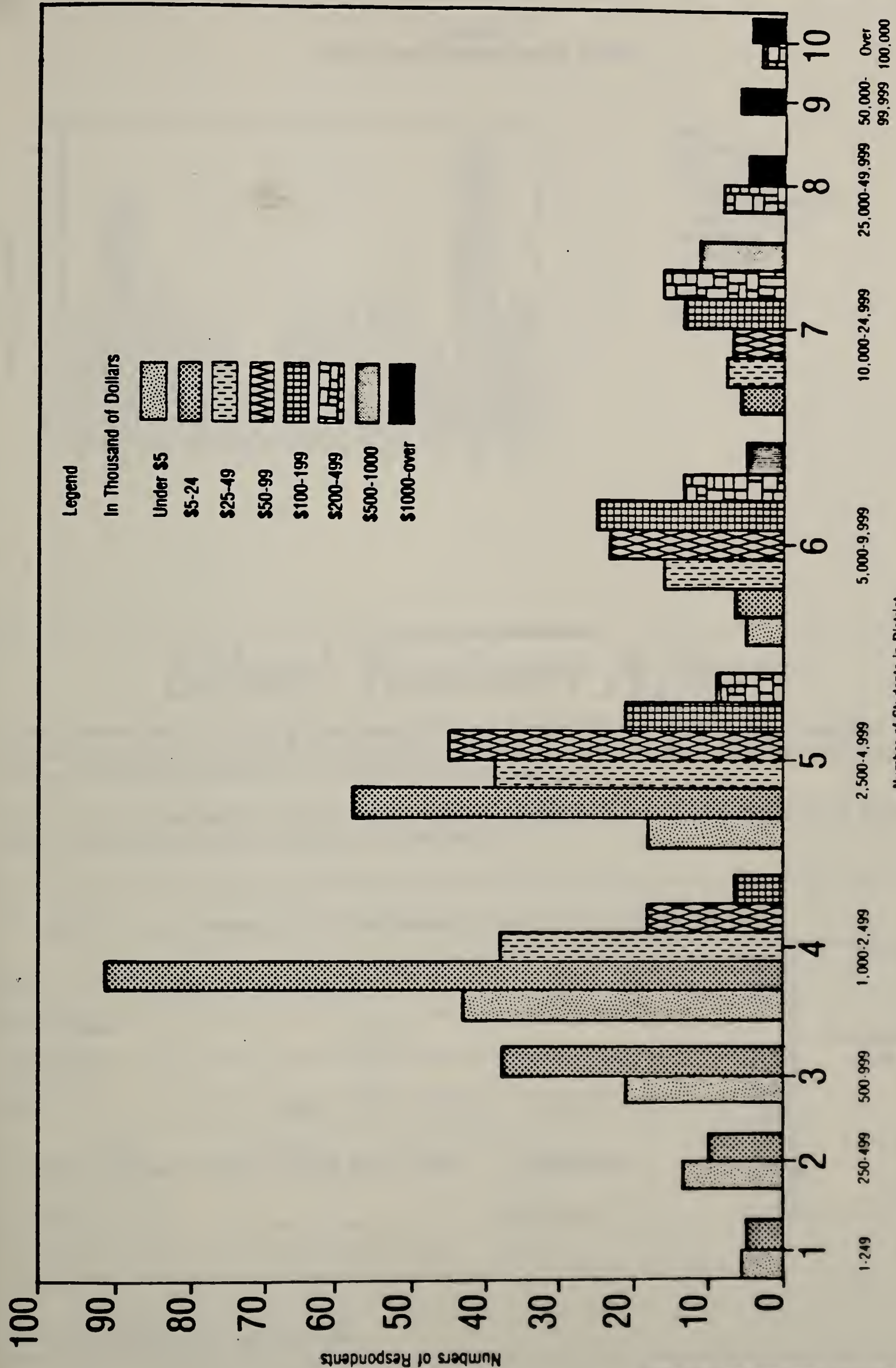


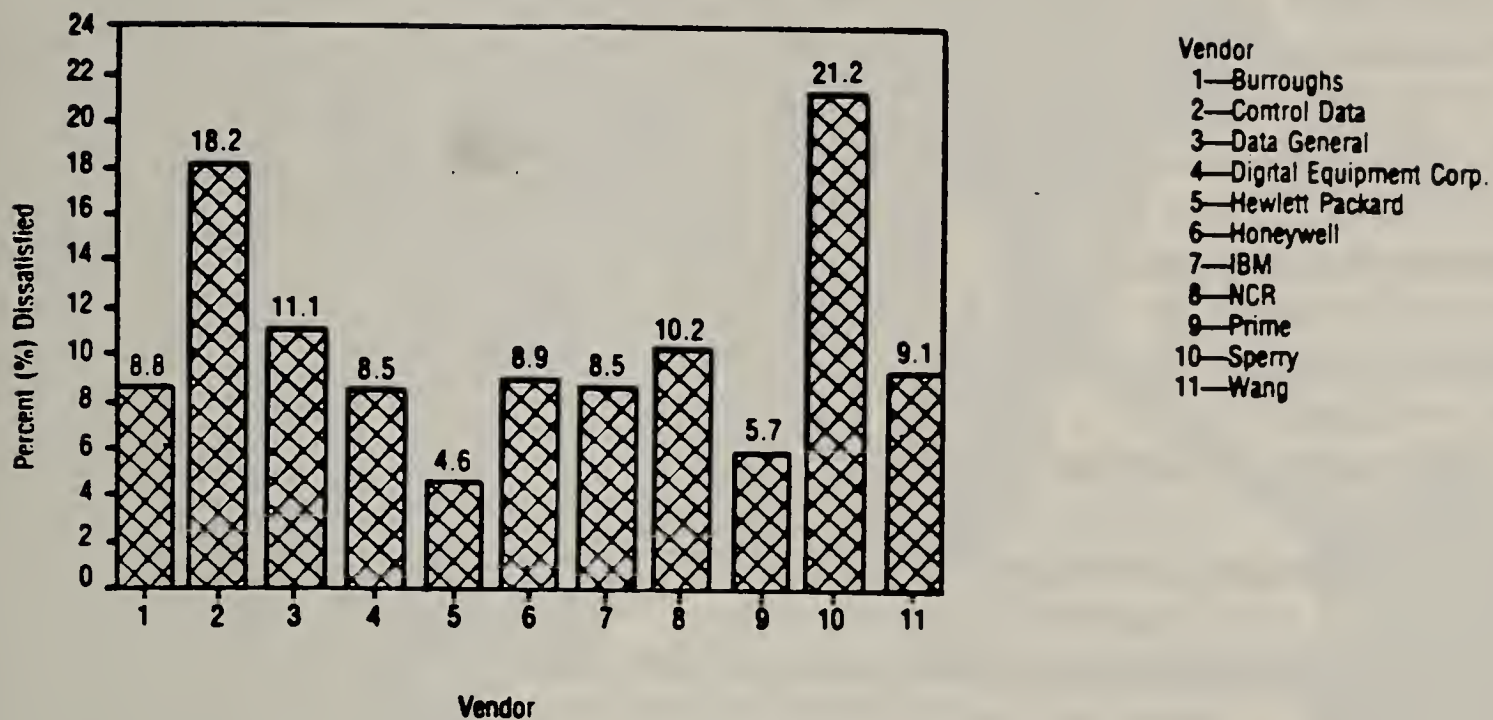
Table 1:
Type of Administrative Computer
by District Size



Number of Students in District
 1 = 1-249
 2 = 250-499
 3 = 500-999
 4 = 1000-2499
 5 = 2500-4999
 6 = 5000-9999
 7 = 10,000-24,999
 8 = 25,000-49,999
 9 = 50,000-99,999
 10 = over 100,000
 11 = unknown



**Table 3:
Percentage Dissatisfied by Vendor**



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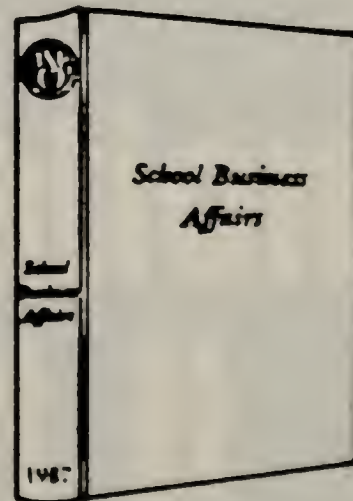
Street Address

City State Zip

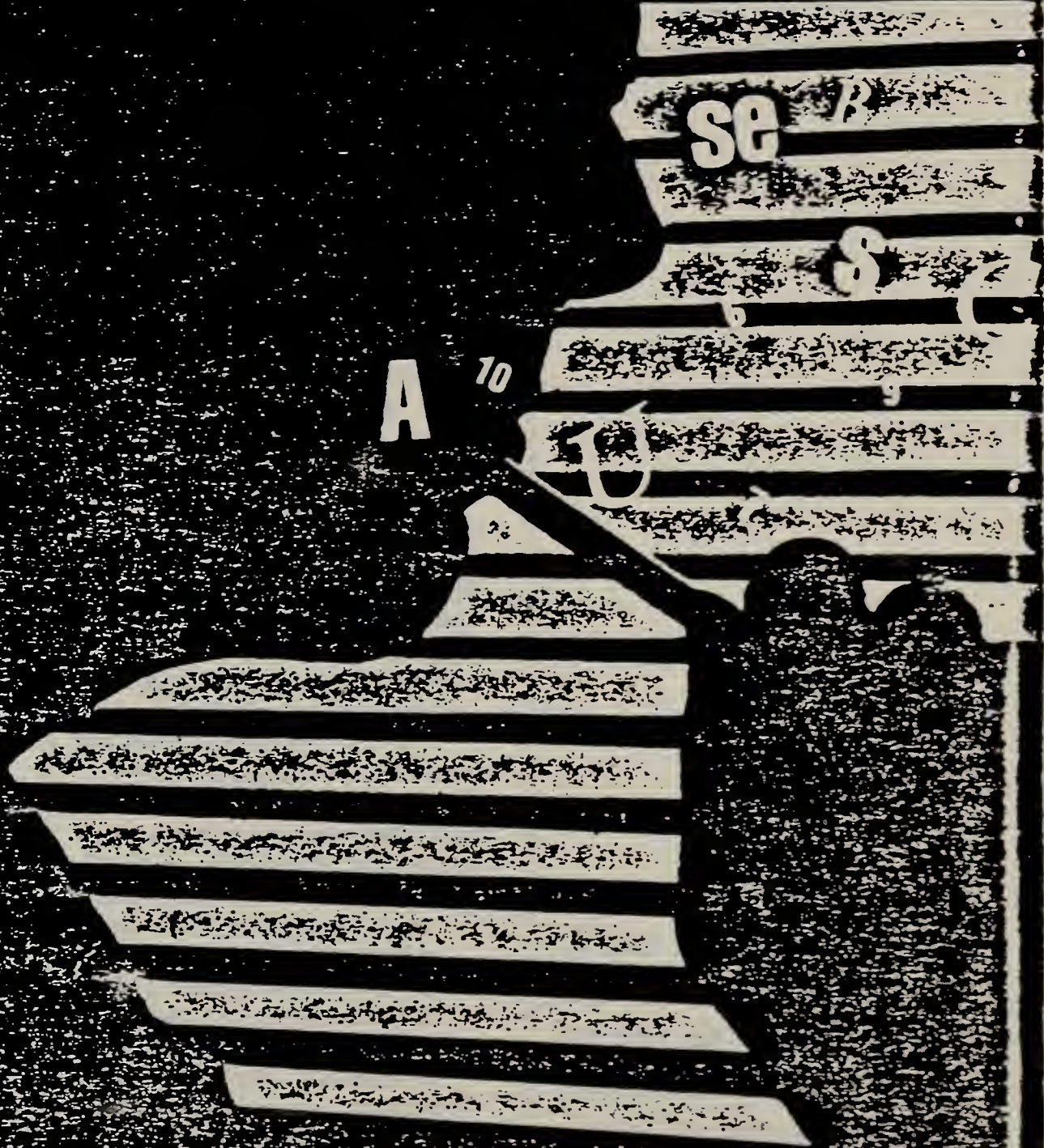
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Signature Phone



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ASBO Automation Survey: Part II

By Judy Touchton

In the last issue we discussed the results of the 1987 ASBO Automation Survey. Unfortunately, we did not have the space to publish all of the results so in this issue we will discuss some additional findings.

In the previous issue, data was presented showing the number of different applications in use; however, no information was given about applications in use by enrollment size. We are presenting it here in hopes that it will help you as you evaluate your district's computer operations.

Tables 1 through 5 show the number of different applications installed by student enrollment. As might be expected, smaller schools have fewer applications installed.

Table 1 shows that the most widely used applications for schools with an enrollment of 1-499 students are accounts payable, accounts receivable, budget preparation, check register, general ledger, payroll and word processing. These are primarily financial applications. The student applications (grades, records, attendance, scheduling) are installed at very few districts.

When enrollment reaches 500 to 2,499 students, check reconciliation, fixed asset inventory, grade reporting, inventory, master student scheduling, personnel, purchasing, student attendance and student records join the list of applications in wide use.

Once enrollment reaches 500 or more students, a computer becomes even more important for managing student information. With enrollments of 2,500 to 9,999 students, the previously named applications are widely used as well as food services, special education and teacher scheduling.

With student enrollments of 10,000 to 24,999 students elec-

tronic mail, property control and student testing management become applications that are in wide use.

When student enrollments climb to 50,000 or more students, budget preparation, bus fleet maintenance, electronic calendar, library, master student scheduling using rotating schedules and negotiation are applications that are in wide use.

What is interesting is that the basic applications do not vary from small districts to larger districts, only the number of applications in wide use changes as enrollment size increases. This information should be useful to many districts in planning applications software acquisitions, especially those districts that are experiencing rapid growth in student enrollments.

Table 6 combines the answers to questions 11 (about where the district's software was purchased) and 21 (about whether the software is satisfactory). The total number of respondents to question 11 is shown in the far right column. Only a respondent's first answer to question 21 is tabulated in the other columns (answers after the first are ignored). If answers to question 21 serve as a measure of satisfaction then answers to questions 11 and 21 serve as a rough measure of vendor satisfaction. It is only a rough measure because some of the answers to question 21 have nothing to do with the vendor, e.g., experience of technical staff, yet would still be counted in Table 6. Also, most of the vendors are cited by very few respondents so it would be hazardous to conclude anything about many vendors. However, two software companies stand out as complaint-free. Software Plus and Weiden Corporation are cited by a fairly large number of respondents, yet very few of those expressed dissatisfaction in question 21.

Once again, the best advice for choosing a software vendor is to follow the advice of other respondents as discussed in the report of the survey in the December issue of *School Business Affairs*. □

What is interesting is that the basic applications do not vary from small districts to larger districts, only the number of applications in wide use changes as enrollment size increases.

Table 1:

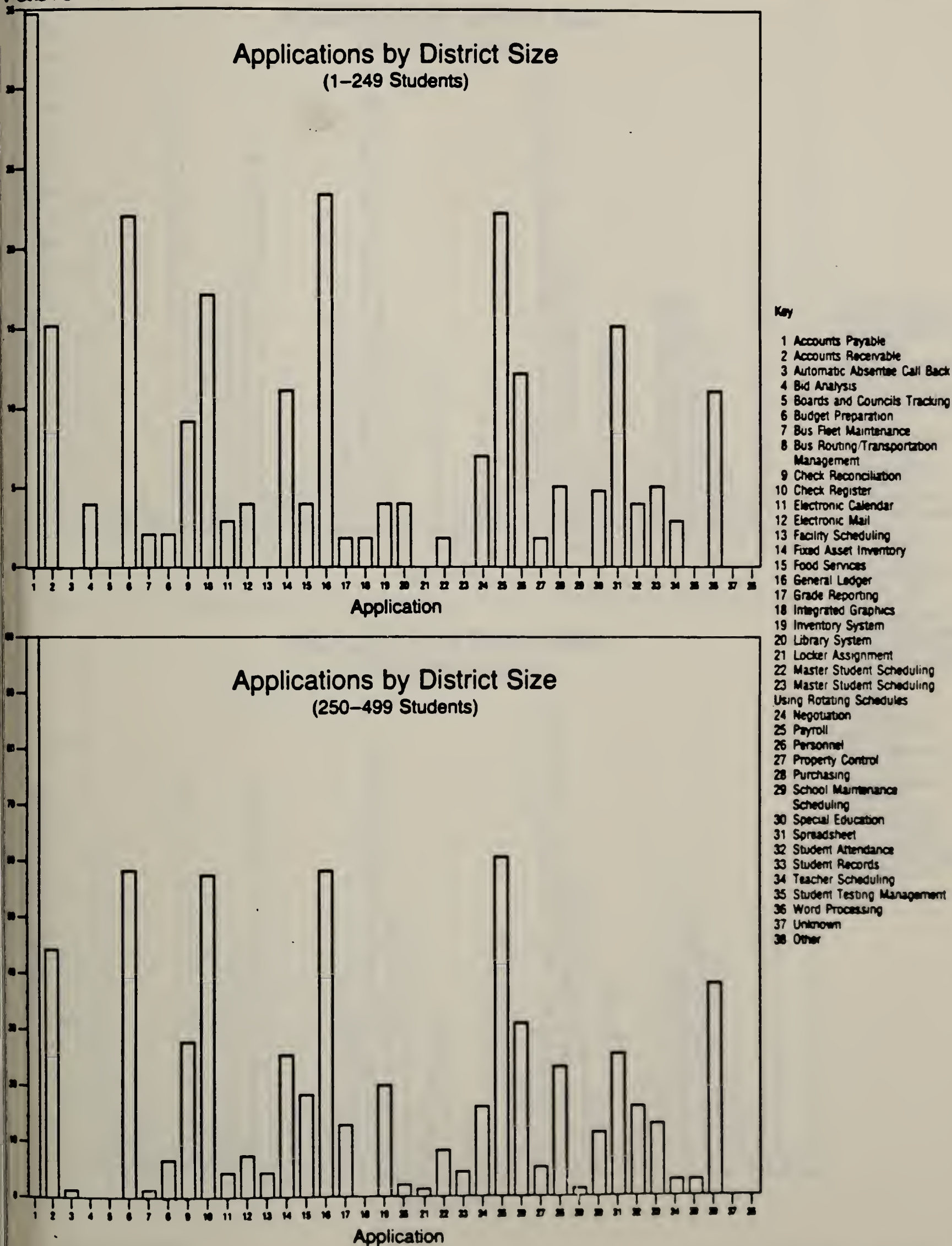


Table 2:

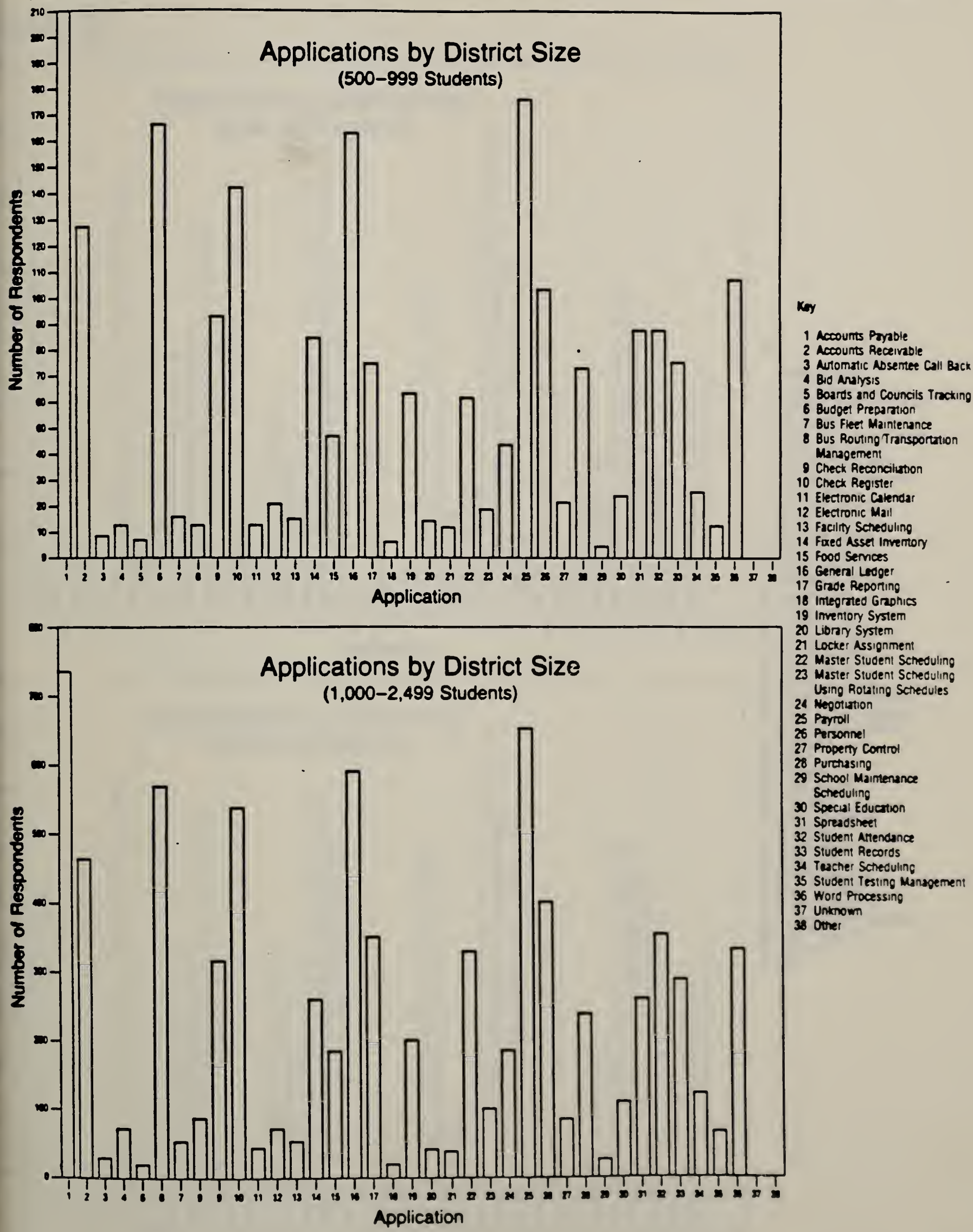
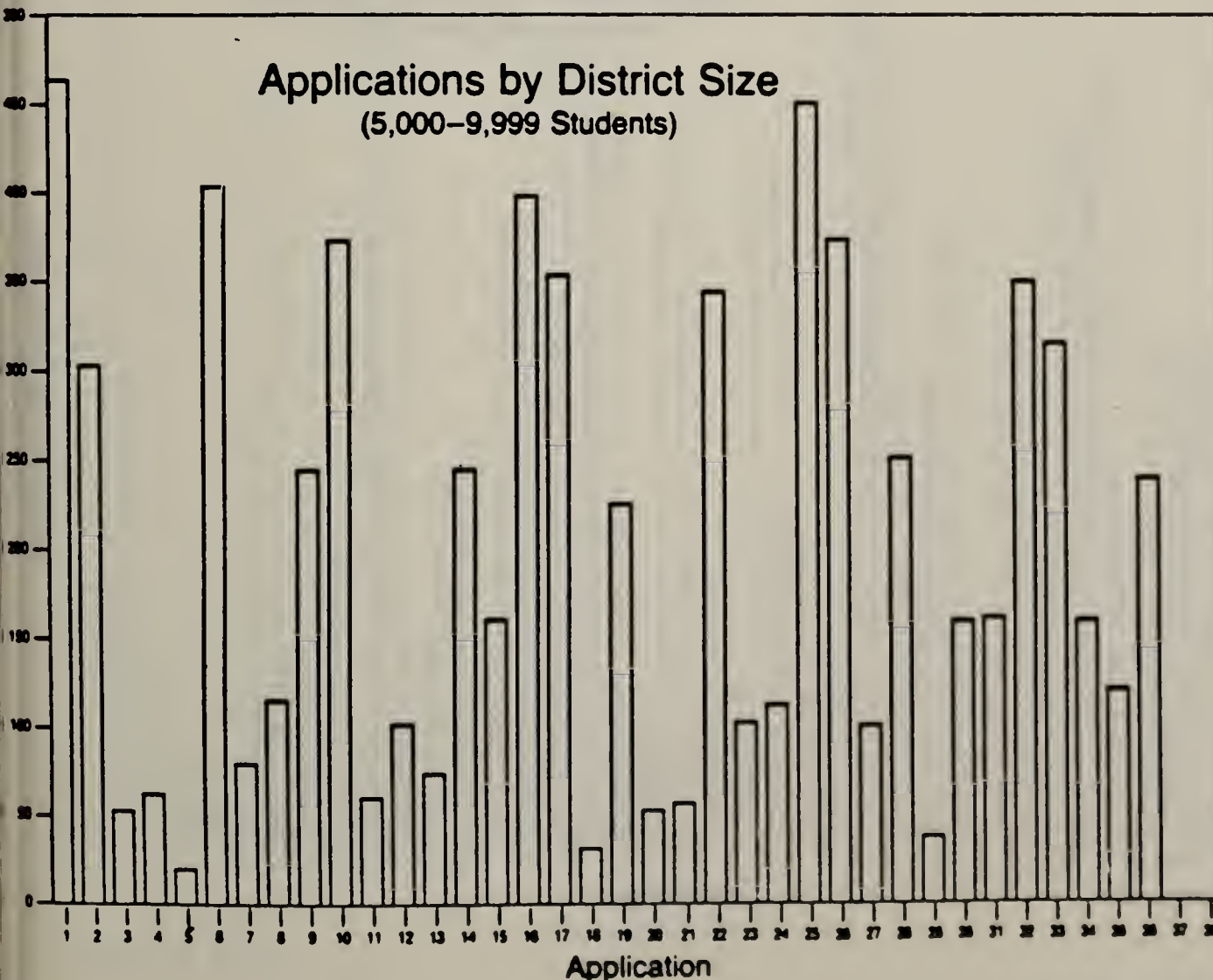
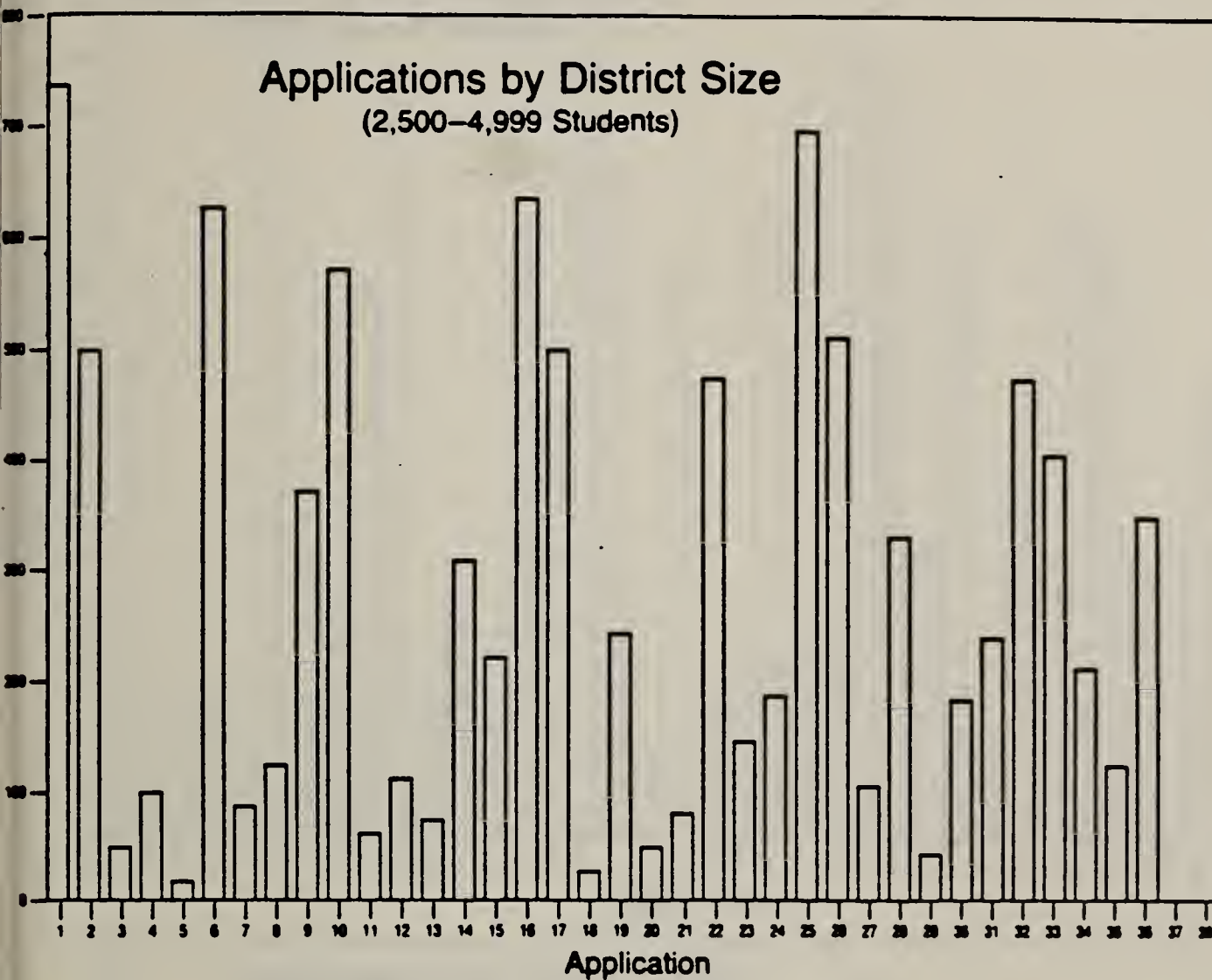


Table 3:



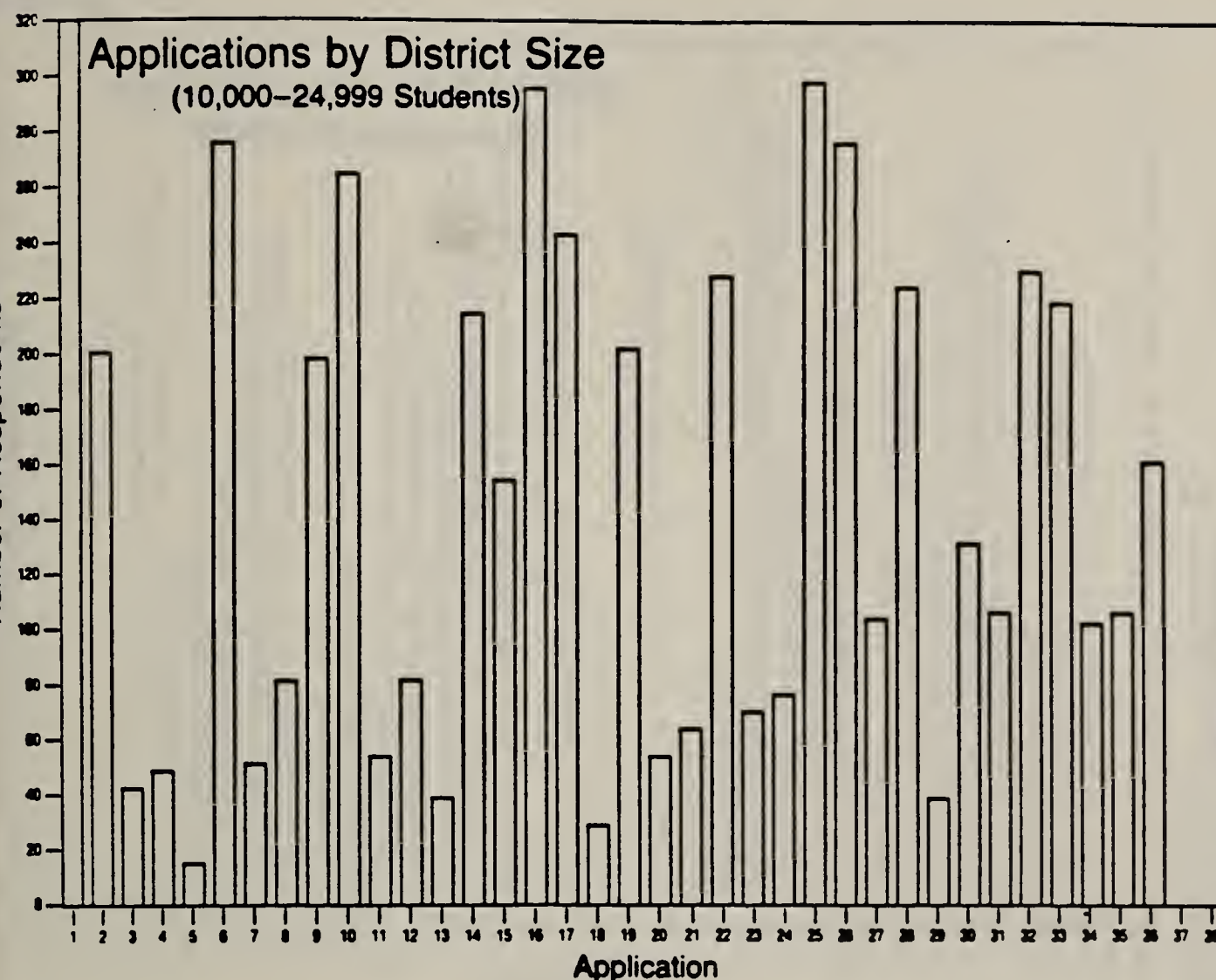
Key

- 1 Accounts Payable
- 2 Accounts Receivable
- 3 Automatic Absentee Call Back
- 4 Bid Analysis
- 5 Boards and Councils Tracking
- 6 Budget Preparation
- 7 Bus Fleet Maintenance
- 8 Bus Routing Transportation Management
- 9 Check Reconciliation
- 10 Check Register
- 11 Electronic Calendar
- 12 Electronic Mail
- 13 Facility Scheduling
- 14 Fixed Asset Inventory
- 15 Food Services
- 16 General Ledger
- 17 Grade Reporting
- 18 Integrated Graphics
- 19 Inventory System
- 20 Library System
- 21 Locker Assignment
- 22 Master Student Scheduling
- 23 Master Student Scheduling Using Rotating Schedules
- 24 Negotiation
- 25 Payroll
- 26 Personnel
- 27 Property Control
- 28 Purchasing
- 29 School Maintenance Scheduling
- 30 Special Education
- 31 Spreadsheet
- 32 Student Attendance
- 33 Student Records
- 34 Teacher Scheduling
- 35 Student Testing Management
- 36 Word Processing
- 37 Unknown
- 38 Other

Number of Respondents

Number of Respondents

Table 4



Key

- 1 Accounts Payable
- 2 Accounts Receivable
- 3 Automatic Absentee Call Back
- 4 Bid Analysis
- 5 Boards and Councils Tracking
- 6 Budget Preparation
- 7 Bus Fleet Maintenance
- 8 Bus Routing/Transportation Management
- 9 Check Reconciliation
- 10 Check Register
- 11 Electronic Calendar
- 12 Electronic Mail
- 13 Facility Scheduling
- 14 Fixed Asset Inventory
- 15 Food Services
- 16 General Ledger
- 17 Grade Reporting
- 18 Integrated Graphics
- 19 Inventory System
- 20 Library System
- 21 Locker Assignment
- 22 Master Student Scheduling
- 23 Master Student Scheduling Using Rotating Schedules
- 24 Negotiation
- 25 Payroll
- 26 Personnel
- 27 Property Control
- 28 Purchasing
- 29 School Maintenance Scheduling
- 30 Special Education
- 31 Spreadsheet
- 32 Student Attendance
- 33 Student Records
- 34 Teacher Scheduling
- 35 Student Testing Management
- 36 Word Processing
- 37 Unknown
- 38 Other

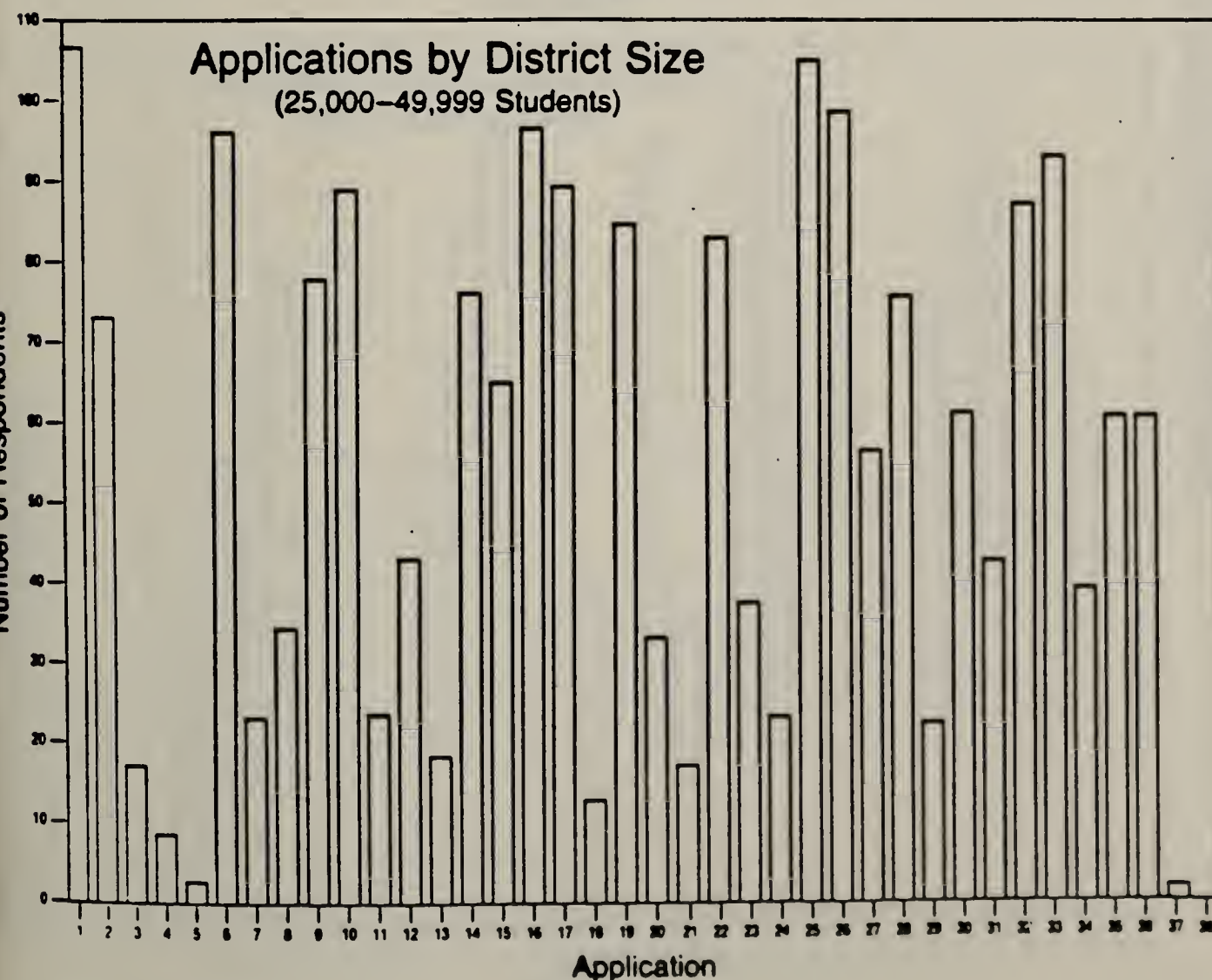


Table 5:

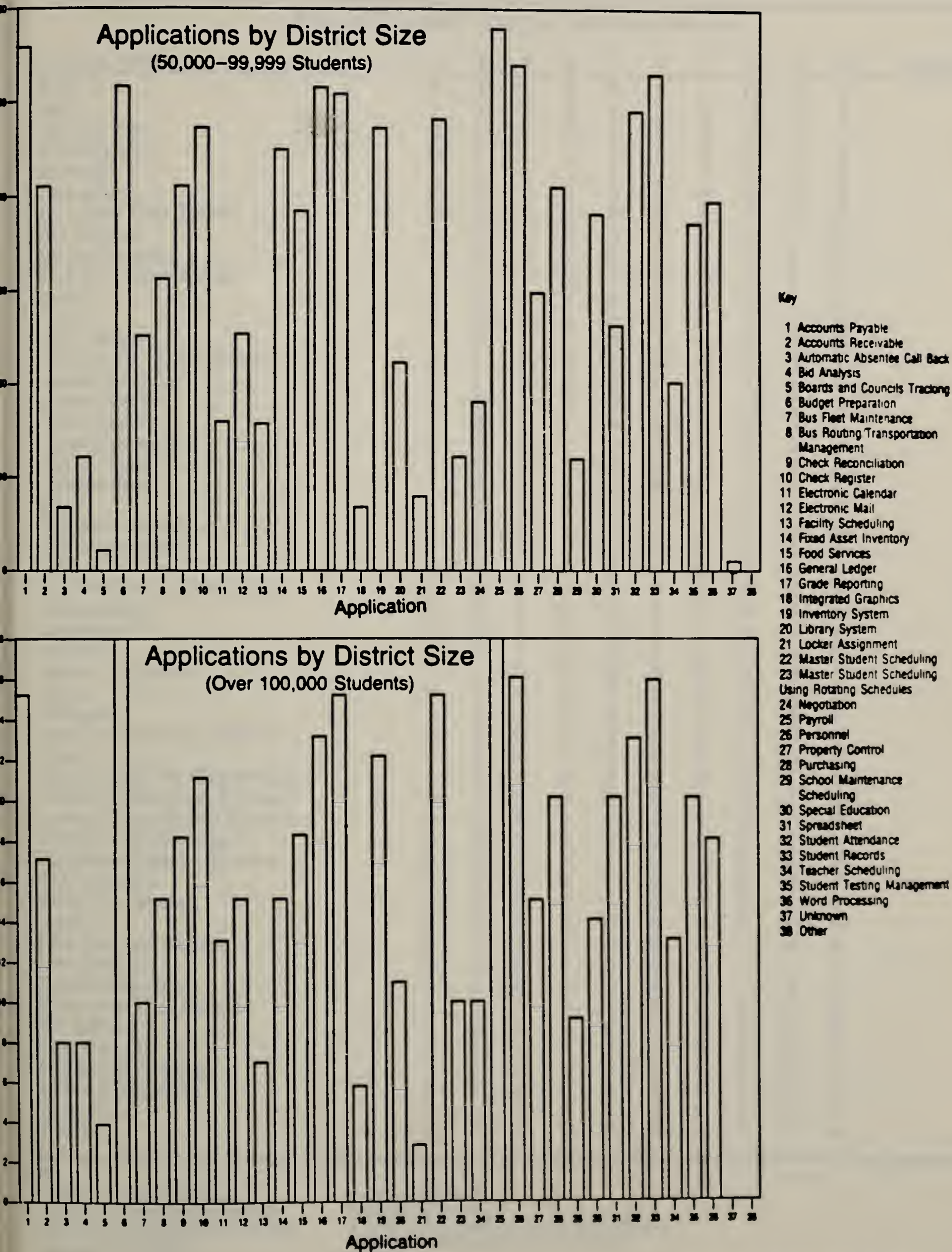


Table 6

If you are not satisfied with your current software, why?

| Software Vendor | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Total Respondents |
|-------------------------------|---|---|---|---|---|---|---|----|---|----|-------------------|
| J and K | 2 | 2 | 6 | 5 | 0 | 5 | 0 | 11 | 5 | 6 | 135 |
| IBM | 1 | 2 | 0 | 4 | 0 | 2 | 1 | 0 | 0 | 1 | 63 |
| Software Plus | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 42 |
| Weiden Corp. | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 36 |
| Burroughs | 1 | 1 | 2 | 1 | 0 | 1 | 0 | 3 | 3 | 0 | 33 |
| Pentamation | 2 | 0 | 4 | 0 | 2 | 2 | 0 | 2 | 2 | 2 | 33 |
| Specialized Data Systems | 0 | 0 | 1 | 1 | 0 | 5 | 0 | 1 | 1 | 0 | 31 |
| Ace Software | 0 | 0 | 1 | 2 | 0 | 1 | 0 | 1 | 2 | 0 | 23 |
| Pertaine Systems | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 23 |
| Midwest Systems Group | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 22 |
| Avatar | 2 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 19 |
| C.C.L. | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 16 |
| CRT Company | 0 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 2 | 16 |
| Management Science America | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 16 |
| Mentor Systems | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 16 |
| Systems Eleven | 1 | 3 | 1 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 16 |
| Carter/Schaeffer | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 15 |
| Central Systems Inc. | 0 | 2 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 15 |
| Century Consultants | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 15 |
| Computerland | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 15 |
| E.D.P. | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 15 |
| Innovak International | 2 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 0 | 1 | 14 |
| SRB International | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 14 |
| NCR | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 12 |
| Howard Guess and Associates | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| School Admin. | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 11 |
| Komputrol | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 10 |
| MASBO | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| Software Unlimited | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 10 |
| Infocel | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 9 |
| Infomatic | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| Texas Educational Consultants | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| Aries | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 8 |
| Digital Equipment Corporation | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 8 |
| Keystone Information Systems | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| American Management Systems | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 6 |
| Computer Solutions Inc. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| Educational Software Systems | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 6 |
| GMT Research | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 6 |
| Rands Data Systems | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| A.S.D.I. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Beck Computer Services | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5 |
| Data Control | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5 |
| Delta Management | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Educational Data Services | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Eff. Software | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 5 |
| Gloucester Co. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| McCormack & Dodge | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 5 |
| Molnar & Associates | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Radio Shack | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5 |
| WSIPC | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |

Key

- | | |
|--|--|
| 1 Application Software Is Too Complex | 6 Vendor Service/Support |
| 2 Operating System Has Bugs/Fails Frequently | 7 Adequacy Of Training |
| 3 Application Software Has Bugs/Fails Frequently | 8 Software Works Properly But Does Not Meet Expectations |
| 4 Shortage Of Technical Staff | 9 Software Has Not Evolved To Meet Current Needs |
| 5 Experience Of Technical Staff | 10 Other |

SAMPLE WARRANT ARTICLE
FOR FINANCING OF
COMPUTER HARDWARE AND SOFTWARE

This draft of a warrant article should be carefully reviewed by local officials, your town counsel and bond counsel prior to placing it on a town meeting warrant. Town counsel and bond counsel should also be consulted well in advance of town meeting regarding the exact wording of the motion to be presented related to this article.

Cities should follow similar procedures appropriate to their action.

To see if the Town will vote to appropriate money to the use of the Selectmen to purchase and install computer hardware and software for the use of the various town departments as well as computer software incident thereto, the money so appropriated to be raised by appropriation from available funds, from the stabilization fund, by taxation and/or by borrowing under the authority of MGL, chapter 44, 7 (28) for the computer hardware, other data processing equipment and computer assisted integrated financial management and accounting systems and MGL, chapter 44, 7 (29) for the computer software, and to authorize the issuing of bonds and notes therefor.

INFORMATION ON
SCHOOL AND MUNICIPAL DATA PROCESSING
FROM
NATIONAL PUBLIC-INTEREST ORGANIZATIONS

The following organizations can provide various information related to data processing in school and municipal organizations.

We encourage you use these resources to your advantage.

American Association of School Administrators
1801 North Moore St.
Arlington, Virginia 22209
(703) 528-0700

American Library Association
50 East Huron St.
Chicago, Illinois 60611
(312) 944-6780

American Planning Association
1776 Massachusetts Avenue, N.W.
Washington, D.C. 20036

American Public Health Association
1015 15th Street N.W.
Washington, D.C. 20005

American Public Power Association
2301 M Street, N.W.
Washington, D.C. 20037

American Public Works Association
1313 East 60th Street
Chicago, IL 60637

American Society for Public Administration
1120 G Street, N.W.
Washington, D.C. 20005

American Water Works Association
6666 West Quincy Avenue
Denver, Colorado 80235

Associated Public-Safety Communications
Officers, Inc.

P.O. Box 669
New Smyrna Beach, Florida 32070

Building Officials and Code
Administrators International
4051 West Flossmoor Road
Country Club Hills, Illinois 60477

Government Finance Officers Association
180 North Michigan Avenue
Suite 800
Chicago, Illinois 60601

International Association of
Assessing Officers
1313 East 60th Street
Chicago, Illinois 60637

International Association of
Chiefs of Police
13 Firstfield Road
Gaithersburg, Maryland 20878

International Association of
Fire Chiefs
1329 18th Street, N.W.
Washington, D.C. 20036

International City Management Association
1120 G Street, N.W.
Washington, D.C. 20005

International Institute of
Municipal Clerks
160 North Altadena Drive
Pasadena, California 91107

International Personnel Management Association
1617 Duke Street
Alexandria, Virginia 22314

National Association of Counties
440 First Street, N.W.
Washington, D.C. 20001

National Association of Town and Townships
1522 K Street, N.W.
Suite 730
Washington, D.C. 20005

National Fire Protection Association
Batterymarch Park
Quincy, MA 02269

National Institute of
Government Purchasing
115 Hillwood Avenue
Suite 201
Falls Church, Virginia 22046

National League of Cities
1301 Pennsylvania Ave., N.W.
Washington, D.C. 20004

National Recreation and
Park Association
3101 Park Center Drive
Alexandria, Virginia 22302

National School Boards Association
1680 Duke Street
Alexandria, Virginia 22314

Public Technology, Inc.
1301 Pennsylvania Avenue, N.W.
Washington, D.C. 20004

United States Conference of Mayors
1620 Eye Street, N.W.
Washington, D.C. 20006

Water Pollution Control Federation
601 Wythe Street
Alexandria, Virginia 22314

BLANKET CONTRACT PURCHASING INFORMATION
FOR
DATA PROCESSING AND WORD PROCESSING GOODS AND SERVICES
MASSACHUSETTS OFFICE OF MANAGEMENT INFORMATION SYSTEMS/
BUREAU OF SYSTEMS POLICY AND PLANNING
(OMIS/BSPP)

Bureau of Systems Policy and Planning (BSPP)
Office of Management Information Systems (OMIS)
Commonwealth of Massachusetts
One Ashburton Place, Room 1601
Boston, MA 02108
617-973-0720

BSPP manages the Commonwealth's blanket contract/collective purchasing system for computer hardware, software, communications and other goods and services. Municipalities and school districts can acquire these items without having to seek competitive proposals, as is normally required. Discounts are typically on the order of 30 to 40% off list price.

On the next few pages, we have included the current blanket contracts which are available or in process through OMIS/BSPP. These should be reviewed carefully.

For more information, call OMIS/BSPP at 973-0120.

BLANKET CONTRACTS
 (available or in process)
 for
 Data and Word Processing
 Goods and Services

May, 1988

| Goods and Services | Contract Start/End Date | Vendors | BSPP Staff (and Backup) Person |
|---|---|---|--------------------------------|
| Data Communications Equipment (Modems, Multiplexors, etc.) 1101-1748-4 | Nov. 20, 1984 Nov. 20, 1989 | Paradyne | Bill Smith |
| Terminals, Printers, Controllers - SNA/SDLC Networks 1101-5197-7 | March 2, 1988 March 1, 1990 | Telex Comp.Products Harris Corporation Lee Data Corporation | William Smith (Bob McInnis) |
| Dedicated Word Processing Equipment 1101-2833-5 | June 1, 1985 Contract extended thru June 30, 1988 | Digital Harris (Lanier) Honeywell Spaulding (NBI) Unisys Systems Automation (CPT, Wang) Wang Xerox | Linda Kelly |
| Standalone Micros 1101-5195-7 | Jan. 30, 1987 June 30, 1988 | AT&T Apple Computer Businessland Computer Mart of NH Computer Resource Center Computer Solutions Computer Sys & Software Computer Town Computerland of CT & MA Computerland of Worcester | Jeff Flannery (Allan King) |

| Goods and Services | Contract Start/End Date | Vendors | BSPP Staff (and Backup) Person |
|---------------------------------|--|--|--------------------------------|
| | | Computers, Etc. Connolly Data Data General Data Spectrum DataWare Products Datatronics Diversified Computers E.L.I. Computers Edge Data Entre Computer Center Epson IOCS ISCA, Inc. ITT J.L. Hammett Lakewood Associates Land of Electronics Mass Business Equipment Center Microage Computer Stores Monroe Systems Omnitek Computers Orchard Computer Personal Comp Resources Pioneer Valley Data Praxis Group Radio Shack Syntech Telex Technology Services Inc. The Computer Factory Unicom Wang Zenith | |
| Clustered Micros 1101-3346-5 | Oct. 15, 1985 contract extended thru June 30, 1988 | Unisys Connolly Data DEC Prime | Walter Crosby |

| Goods and Services | Contract Start/End Date | Vendors | BSPP Staff (and Backup) Person |
|--|---|---|--------------------------------|
| Burroughs-Compatible Terminals, Printers, Single-User Micros Multi-User Micros 1101-2892-5 | Dec. 1, 1985 June 30, 1990 | Datamaxx Unisys | Barbara Duffy |
| Cabling Services 1101-3689-6 | Jan. 1, 1986 contract extended thru June 30, 1988 | CCN Allcom | Bob Hester |
| Sperry-Compatible Terminals, Printers Multiplexors, etc. 1101-4083-6 | Feb. 24, 1986 March 1, 1990 | Unisys | Joe Molloy |
| Bulk Cable and Connectors 1101-4013-6 | Jan. 1, 1986 contract extended thru June 30, 1988 | Yankee Electronics Abbott Electronics Atronix | Bob Hester |
| Computer Assisted Transcription (CAT) Systems 1101-4376-6 | Aug. 14, 1986 Aug. 14, 1988 | Baron Data | Walter Crosby |
| Non-Impact Printers 1101-4380-6 | March 25, 1986 contract extended thru June 30, 1988 | Computer Solutions Xerox Businessland Holoscan Westwood Computers | Linda Kelly |
| Microcomputer Application Software 1101-5630-7 | July 1, 1987 Aug. 31, 1988 | Government Technology Services, Inc. Wentworth House Corporate Software | Bob McInnis |
| Coax to wire adapters (BALUNS) 1101-4499-6 | April 1, 1986 Contract Extended thru June 30, 1988 | Star-Tek Lee Data Allcom, Inc. | Judy Belliveau |
| Document Conversion 1101-5058-6 | Nov. 1, 1986 Oct. 31, 1988 | Keyword Systems, Inc. | Linda Kelly |

| Goods and Services | Contract Start/End Date | Vendors | BSPP Staff (and Backup) Person |
|--|----------------------------------|---|--------------------------------------|
| Sperry Generic Wiring Devices 1101-5415-7 | Nov. 26, 1986 Nov. 26, 1988 | Telenex Corporation | Bob Hester |
| Service & Maint. for Microcomputers and Peripherals 1101-5149-7 | Aug. 20, 1987 Nov. 30, 1988 | Businessland, Inc. Connolly Data Syst. Gramman System Sup- Honeywell Bull, Inc. J.L. Hammett Co. Orchard Computer Xerox Corp. | Magie Driscoll (Bob Hester) |
| Port Protection Devices 1101-5196-7 | May 19, 1988 May 19, 1990 | Adalogic, Inc. Hear Again Co. | Ray Greenup (W. Crosby) |
| Laptop Computer 1201-6579-8 | March 25, 1988 March 24, 1990 | Portable Comp. Inc. Grid Systems, Inc. Computers Plus, Inc. Computer Solutions | Allan King |
| CADD Hardware, Sfwr. and Services 1101-5072-8 | April 1, 1988 March 31, 1993 | McDonnell Douglas Corporation | Linda Kelly |
| Systems Development Methodology Life Cycle 1101-5690-8 | Feb. 6, 1988 Feb. 6, 1991 | DMR Group | K. Ferriell |
| Departmental Processors 1101-5706-8 | | Procurement in process - estimated availability Aug.1988 | Walter Crosby |
| Project Management Software 1101-5732-8 | | Procurement in process - estimated availability June1988 | Walter Crosby |

MICROCOMPUTER INFORMATION

FROM

THE INTERNATIONAL CITY MANAGEMENT ASSOCIATION

International City Management Association
1120 G Street, N.W.
Washington, D.C. 20005
202-626-4600

The International City Management Association (ICMA) offers two (2) important publications on microcomputers in local government.

- A. The Software Reference Guide is a compendium of municipal microcomputer applications. It covers almost all functions of local governments.
- B. The MicroSoftware News is a biweekly newsletter which provides information on applications, innovations and software reviews.

These are very valuable publications and should be considered "must haves" for all serious users of microcomputers in local government. Order forms for each of these follow on the next pages.

We're sure you'll find this edition of the *Software Reference Guide* an invaluable source of information on local government micro-computer applications. So sure—in fact—that if you're not 100% satisfied with it, you can return the guide to ICMA within 15 days for a full refund.

Order Form

Software Reference Guide 1988

- ☐ **YES!** Send me my copy of the second edition of the *Software Reference Guide* (40124) for only \$35.00, plus my FREE issue of *MicroSoftware News*. (40125) \$

Free bonus offer expires 3/1/88!

| | |
|------------------------------------|-----------|
| Processing charge (unless prepaid) | \$ 3.75 |
| TOTAL DUE | \$ |

955

Name _____

Title _____

Street Address _____

(UPS will not deliver to Post Office Boxes)

City _____

State _____

Zip _____

Payment Information

- ☐ I prefer to pay now and save processing charges. My check is enclosed, payable to ICMA. (Payable in U.S. dollars only.)
- ☐ Charge to my VISA or MasterCard.

Acct. # _____

Exp. date _____

- ☐ Please bill me. Purchase order required for all orders over \$50. Purchase order # _____.
- If written purchase order is to follow, please mark it "confirmation only."

Signature _____

Date _____

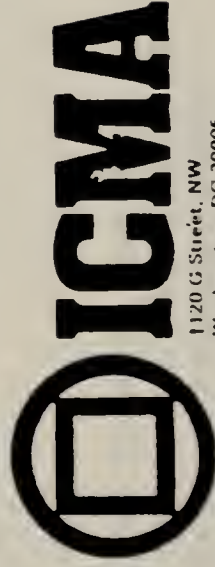
Telephone () _____

Prices are guaranteed through June 30, 1988.

Please allow 3-4 weeks for delivery.

Returns accepted within 15 days.

1/88



1120 G Street, NW

Washington, DC 20005

(202) 626-4600

Announcing . . .

Software Reference Guide 1988

The Completely Revised,
Second Edition of ICMA's
Authoritative Guide to
Local Government
Microcomputer Software

I know to go to for the information we need."

—A California Local Government Employee

to know more about our own clients... just how highly this ICMA publication is regarded in the local government community."

—A Virginia Microcomputer Consultant

The problem is simple... Too much information on local government microcomputer applications and not enough time to track it down.

Since their acceptance as productivity-increasing business tools, microcomputers and their local government applications have become one of the most powerful organizational products available to the public sector.

In truth, the amount of information available on these products can be overwhelming! How can you—the local government manager—possibly sort through the array of available hardware and programs to locate the resources and packages you need?

The solution is also simple. In 1986 ICMA published its first *Software Reference Guide*—a complete resource listing descriptions of hundreds of available software programs geared specifically to local government applications.

And, now, in its second edition, the *Software Reference Guide* goes a step further not only to help you choose the software you need to get the job done, but to facilitate networking among available packages. With the addition of more than 100 new programs, the *Software Reference Guide* will help you:

- Target the available software packages created for your specific application.
- Locate the vendors in your area that market the products you need.
- Integrate new software programs into your present system to increase current productivity.
- Gather valuable information from current local government users with applications similar to yours.

I know from speaking to (your users) that they do find your guide to be valuable."

—A Florida Microcomputer Products Vendor

And... Something New This Year

Now, for the first time, the *Software Reference Guide* introduces information on compatible minicomputer software programs. You'll discover that many of the software programs listed in this publication can be run on mini as well as microcomputer hardware and have networking capabilities as a basic or optional feature.

An Indispensable Reference Guide... In One Convenient Directory

This year's edition of the *Software Reference Guide* is a "must have" for any local government or public agency that plans to buy—or already owns—mini or microcomputer products. With software programs grouped in packages to help you coordinate systems, and an alphabetical subject listing for quick program location, the *Software Reference Guide* is sure to become one of the most often used directories on your reference shelf.

Free Bonus Offer

But, if you're still uncertain about placing an order—here's an added incentive... With each order we receive for the 1988 edition of the *Software Reference Guide*, we'll include a free issue of ICMA's *MicroSoftware News*—the bimonthly newsletter devoted exclusively to microcomputer applications in local governments and public agencies. This issue of *MicroSoftware News* was prepared entirely on our in-house microcomputer desktop publishing system. And the *Reference Guide* will show you how you, too, can increase your productivity!

This second edition of the *Software Reference Guide* has been divided into three sections—each designed to provide you with technical resource information on local government microcomputer software and program applications. At your fingertips you'll have:

Software Programs and Suppliers

... A catalog of available products organized by program area. This section contains charts that summarize each software function, along with a current list of vendors throughout the country. Over 450 programs—developed specifically for local government operations—are listed in this section, as well as price information and the name, address, and telephone number of the company supplying the program.

Applications

... Brief summaries from local governments highlight the many innovative applications public organizations and agencies have discovered for microcomputers and compatible software programs. In addition, each summary includes a contact's name, address, and telephone number to put you in touch with actual users.

Resources

... This extensive list of companies and publications provides you with specific microcomputer information, including publishers' names and addresses, and a directory of electronic networks and bulletin boards.

Order Form

MicroSoftware News

- ☐ **YES!** Sign me up for a one-year subscription to *MicroSoftware News* (34541) @ \$130.00. If I'm not completely satisfied, I can cancel at any time and receive a full refund on all unmailed issues.

Also send me:

- *Microcomputers and Local Government* (37672) @ \$17.50\$
— *Data Processing Security Policy and Guidelines* (40019) @ \$9.00\$
— *Data Processing Procedure* (40017) @ \$9.00\$
— *Electronic Mail: A New Communications Alternative* (37222) @ \$10.00\$
— *Micrographics Analysis* (40027) @ \$13.00\$
— *Request for Building Inspection Subsystem* (40034) @ \$9.00\$
— *Microcomputer Committee Report* (34177) @ \$11.00\$
Process charge (unless prepaid) 3.75
TOTAL DUE\$

955 Name _____

Title _____

Street Address _____
(UPS will not deliver to Post Office boxes)

City _____

State _____ Zip _____

Payment Information

- ☐ Payment enclosed (U.S. dollars only)
☐ Charge to my VISA or MasterCard

Acct # _____

Exp date _____

- ☐ Please bill me. Purchase order required for all orders over \$50. Purchase order # _____
If written purchase order is to follow, please mark it "confirmation only."

Signature _____

Date _____

Telephone (____) _____

Prices are quoted through June 30, 1986.

Please allow 3-4 weeks for delivery.

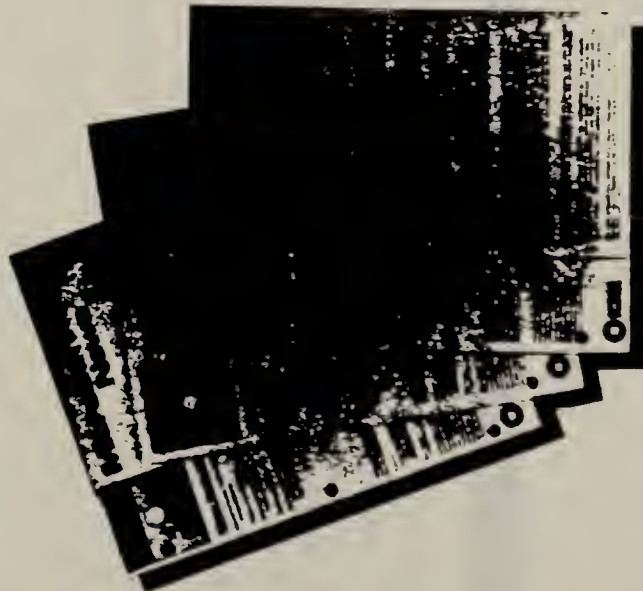
Returns accepted within 15 days.

12/87

Mail to ICMA at 1120 G Street NW Washington D.C. 20005



Micro Software News



**A newsletter for
local governments**

Micro Software News

**No jargon.
No sales calls.**

**Just the information
you need to deal with
microcomputers
efficiently & effectively**

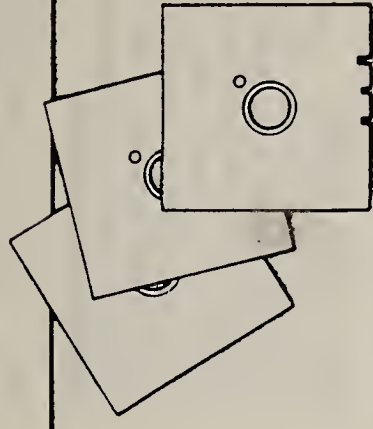
If you don't know where to find the most effective applications and programs, your investment in microcomputer automation won't pay off.

It's time to stop wasting energy tracking down software programs, only to find that they don't meet your needs. It's time to start reading *MicroSoftware News*.

MicroSoftware News is a bimonthly newsletter devoted exclusively to microcomputer applications in local governments and public agencies. It brings you readable, focused information—what you need to know to decide whether or not a particular application will work for you.

**When you know what type
of software you need**

Finding the right software program for a specific local government operation can be a time-



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THE REQUEST FOR PROPOSALS AND THE SYSTEM CONTRACT:

SAMPLE CONTENTS

The Request for Proposals (RFP) and the system contract are the two (2) major means by which the community or school district protects its best interests in acquiring data processing systems and services.

On the next several pages, we have included a listing of subjects which should be addressed in each of these documents. Naturally, particular contents will vary according to the community's specific needs and interests.

At the same time, however, two (2) points need to be made about these documents:

1. They should indicate to the reader the scope and complexity of the decision-making process involved in acquiring data processing systems and services.
2. They should make clear that these are matters where experienced, professional assistance can be of significant benefit to the community or school district.

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